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AMERICAN VETERINARY REVIEW

EDITED BY

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EDITORIAL.

EUROPEAN CHRONICLE.

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COMPARATIVE PATHOLOGY—ITS IMPORTANCE.—Those who follow the progress that is being made in medical sciences have already long ago realized the fact that in our days pathology can no longer be a separate and divided part of medical education, and that all the various pathologies pertain to one essential, mothers of the others, viz.: *Comparative Pathology*. Indeed, we have to-day societies of that name; we have journals; there is going to be an International Congress of Comparative Pathology, and, besides that, we have seen a chair of professor of experimental and comparative pathology created in several of the faculties of medicine, human as well as veterinary.

At the opening of the course of lectures to be given at the Faculty of Medecine, in Paris, the eminent, learned holder of the chair, Professor Dr. H. Roger, has delivered a masterly lecture, from which I am pleased to make some extracts from the record published in the *Revue de Pathologie Comparée*:

* * * "This year I shall limit my remarks to our actual knowledge of the diseases common to men and animals, principally on those which can be transmitted between them in the ordinary conditions of life.

“First, we shall study the infectious diseases. And among them one which is of the most important, and will require our close and long attention—*tuberculosis*.

“This disease attacks most of the animal species, mammalia, birds, and even fishes and reptiles. And a first question is, ‘Is the pathogenous agent found in the lesions of these animals the same one which is found in man?’

“Indeed, the various tuberculous bacilli cannot be entirely assimilated. There exist some peculiarities of culture, of aspect, and pathogenous properties which allow of the description of several varieties or species.

“Leaving aside the bacilli found in fishes, batracians and reptiles, whose study is not yet sufficiently advanced, we can admit three principal types—the human, the bovine and the aviary. And whether one attaches great importance to the differential characters, or is more or less impressed by the similarities and differences, or, again, grants value to the persistence or variability of the characters observed, these three bacilli are considered as belonging to distinct species or as belonging to simple varieties of one. It is the problem always discussed, even to-day, of the unity or plurality of tuberculosis, a problem equally interesting in theory and in practice. And, naturally, the question will be, What dangers can man run by the ingestion of the meat or milk coming from diseased animals? The recent works upon the intestinal origin of pulmonary tuberculosis brings a new spark of actuality to that question. Behring has stated that the milk of contaminated cows was the principal cause of infection with children. That opinion has been strongly discussed; it deserves long and minutious attention. We will give it in the course of our lectures. But for the present you will appreciate how *it is interesting for physicians to be well acquainted with the characters of bovine tuberculosis and with the peculiarities of its bacillus*.

* * *

“Animals that live in promiscuity with man frequently contract tuberculosis, and may transmit it. By opposition to the

belief of times gone by, the dog is often suffering with it. It may localize itself in the kidney, giving rise to lesions of softening and throwing in the urine considerable quantities of bacilli. Again, see the danger of the propagation, which is so much greater that canine tuberculosis is easily overlooked. It is often manifested by productions of neoplastic appearance, which resemble more those of cancer than of tuberculosis.

“ These home pet animals are yet more dangerous. Those among you who have been in my laboratory have seen a parrot, now dead, which had cutaneous tuberculosis. As is commonly the case, this bird had been infected by her owner, who had advanced tuberculosis, and the bacilli of human origin had invaded the skin of the head of the bird and promoted the growth of warty lesions. In cases of this kind the animal, annoyed by these growths, scratches itself as it can; scabs of the skin get loose. They are particularly rich in virulent bacilli. Their dissemination spread the disease, and the infection is so much more dangerous than passing from the parrot; the pathogenous agent seems to have gained more infectious power. What is the end of the history of this bird? The first owner died. By his will the parrot went to a young woman, healthy and strong. After a few months she began to cough, to lose flesh. Affected with acute tuberculosis, she died in less than a year. No one around her had suspected the cause or origin of her disease. Her physician had never suspected it. Having become too homely, no one wanted the bird any more, and he was sent to my laboratory, where, for those who have seen his lesions, a diagnosis will remain evident and easily confirmed by bacteriologic examination.

“ This observation shows the interest pertaining to the study of comparative pathology. It is not an isolated fact. It shows the responsibility of the physician who is ignorant of the peculiar characters of tuberculosis in animals.

“ Similar remarks can be applied to a great number of human infections of animal origin—anthrax, glanders, rabies, foot and mouth disease, etc.—which we will consider during this course,

insisting on their comparative pathology, which the physician cannot afford to ignore.

* * *

“Although not having as immediate practical applications, the history of the non-infectious diseases does deserve also our attention. Animals are suffering with tumors, which, studied with activity in the last few years, have thrown much light upon the still dark question of cancer. Animals are also exposed to visceral affections—the heart, bloodvessels, respiratory apparatus, the digestive tract, the liver, kidneys and the nervous system are the seat of troubles and of lesions—comparable to those that human pathology shows us. It is difficult to reproduce experimentally affections of that kind. But we can benefit by the cases that occurred outside all interference, to follow experimental researches, to explain the mechanism of the accidents, or to determine the action of medicamentous substances.

“We must, however, bear in mind that analogous diseases may assume different characters, according to the species of animals. For instance, what is observed with the nervous system? Contrary to what is noticed in man, paraplegia is much more frequent in animals than hemiplegia; the spinal cord is affected much oftener than the brain. That is a marked example of predispositions connected with this function. This etiological condition is well known. But perhaps it is not sufficiently brought forward; and it seems to me as important to the morbid aptitudes created by anterior troubles acquired insufficiencies, whether hereditary or congenital. When studying comparative pathology, one will meet contradictions which have no other cause. Morphine is a cerebral poison to man. With dog, before reaching the brain, it acts on the spinal cord and gives rise first to paresia of the hindquarters. The walking of the animal is altogether peculiar, and recalls that of the hyena (hyenoid walk of Cl. Bernard).

“Microbian poisons act as vegetal alkaloids. That is why, after spontaneous or experimental infections, paraplegia is so frequent.

“Comparative pathology is not less important for the therapist, for the hygienist and the physician. Most ordinarily one is satisfied to define what on healthy animals are toxic doses and also the effects of the different drugs. It would be good to complete by experiments upon animals those preliminary discoveries. Comparative therapeutics has already rendered valuable services. It is a veterinary medicine that has taught us the specific treatment of actinomycosis by iodide of potassium. And it is useless for me to remind you that it is to comparative pathology that is due one of the greatest discoveries of prophylaxy, by which the antivariolic vaccination has wiped out one of the most horrid of the human diseases and has inspired the modern researches with preventive vaccination.

“All those facts, briefly considered, will be sufficient to demonstrate the importance of comparative pathology, which can be still more appreciated by the study of the infectious diseases common to man and animals, such as anthrax, glanders, rabies, Maltese fever, foot and mouth disease, and tuberculosis.”

* * *

PEROXIDE OF HYDROGEN.—That this preparation is extensively and advantageously used in medicine since years is a positive fact. But can it be applied in every instance, in every case, and are there indications where it is contraindicated or where, instead of being advantageous, it is useless and dangerous? In the *Journal de Medecine et de Chirurgie Pratiques*, Prof. Lucas Championnière, a French surgeon of world-wide reputation, treats of this question with the authority attached to his name:

“Surgeons who in our days use oxygenated water to take the place of other antiseptics have two notions in view, one of which is perfectly wrong and can bring to them serious effects.

They consider it as a powerful antiseptic. It is correct, but from this fact they fancy that it can be used in every instance when antiseptic action is needed. As it is not toxic, they believe that it can be employed freely and in every circumstance. But then in so doing they overlook a great property of that peroxide, viz., that it is one of the most powerful destroyers of all organic elements. Besides that, its decomposition is easy. And this decomposition is so rapid, when in the presence of an organic substance, that it can be said that in many circumstances all its antiseptic properties are lost.

“Those are the fundamental conditions which most often cause its use to be bad, inefficacious and very inferior to other substances of current application.

“Let us consider a few examples of these practical faults.

“Sometimes wounds are washed with it, which would otherwise heal rapidly. In this case it keeps the cicatrization back, and it is only when this is the object in view that such free wash is justified. Again, such washing is also applied upon wounds which would heal by first intention. Experience has proved that in these cases the application must be very discreet. Healing of an operating wound is easier and more perfect with a washing of strong phenic water or a solution of chloride of zinc than with peroxide.

“By opposition, regions where the secretions are abundant and septic are washed with a mixture of simple water and a very small proportion of oxygenated water. One can be assured that under this condition the antiseptic properties of the peroxide are of little use and the dilution has no action. Oxygenated water is sold now everywhere. It is not always very pure, without inconvenience to its antiseptic value. Indeed, it is so much greater that the water is more acid and perhaps a little more irritating. But it is more so than numerous other antiseptic substances. Peroxide is sold in various proportions of strength at 12, 20 and even 100 volumes. This is a good thing, as the true manner to use it is to employ a very small quantity of the water, very concentrated, with a very rapid contact. The addition of sulphuric

acid or of alcohol to preserve it or reduce its acidity is of no great advantage. Its application is always more or less painful.

* * *

“ In what circumstances can oxygenated water be used ?

“ Specially whenever the passing action of a very powerful antiseptic is needed. Its application with a permanent dressing is an error and must never be resorted to.

“ The most rational use is in local septicæmia, furuncles, abscesses. No other substance can be as powerful to arrest putrefaction in wounds and large suppurating centers. Then it can be used freely.

“ It has been said that it acted only on anaerobic microbes. But it is an error, as it also acts on the aerobic. In a very aseptic center it can be used freely and repeatedly, and its action be reinforced by the use of another antiseptic, having a lasting effect, for the dressing. Injections in wide collection of suppuration can be used and repeated until the chances of cicatrization are present.

“ In irregular wounds and those with small or large sloughs the local action of peroxide is most precious.

“ Contused wounds of some dimension are kept back in cicatrization if treated daily with peroxide. Yet, if a small anfractuous wound, due possibly to the presence of foreign bodies, is injected every day with only a few drops of oxygenated water, all phenomena of infection may be prevented and no interference with cicatrization will occur.

“ The skin may be sterilized with peroxide, but it must be done with care, as when its use is repeated too often it loses its effects.

“ Peroxide has a destroying action on catgut. If peroxide is applied upon wounds close with catgut threads, these break and good cicatrization is prevented.

“ When, after an operation, the wound has been infected, it would seem that the use of peroxide is indicated to limit the infection. It is an error. An injection in the suppurating tract

may be sufficient to break up the already existing union. Phenicated water or chloride of zinc, spirits of turpentine or tincture of iodine will, in such cases, give the best results.

“In the mouth and in the rectum the use of oxygenated water is very precious, as it is not toxic and, having a great antiseptic power in those centers, always septic. A great concentrated solution is well supported in those regions.”

To resume, Lucas Championnière adds: “Oxygenated water is one of the most precious antiseptics known. It is an error to consider it as harmless because not toxic. Its untimely use may ruin the results of the best operation. The use of solutions made to dilute oxygenated water at 10 or 12 vols. is useless, as the real action of the product is only when it has not yet been decomposed by contacts which destroy it easily. As for other antiseptics, it is essential to use it in doses sufficiently high to obtain a powerful and passing action. Abuse or expected lasting action must not be considered.

“Oxygenated water can be used warm. In heating it, it is concentrated rather than reduced in the quantity of oxygen. Warmly applied, it avoids the unpleasant effect of cold coming in contact with the wound, and its antiseptic power is greater, as long as elevation of temperature always increases the strength of all antiseptics.”

* * *

SEVERE EPIZOOTY OF RABIES.—In glancing over the *Annales de l'Institut Pasteur* for November, 1911, I found a very interesting record which presented some peculiar points of unusual observations, and was published by Dr. A. Parini, of Sao Paulo (Brazil).

Although it is not the first time that epizootics of rabies have been observed among domestic animals, this one proved of an extensive severity, having destroyed almost completely the bovine and equine population of the infected region and seriously interfered with the breeding carried on in the whole country.

A serious disease had been reported as prevailing among cows and horses and had been pronounced to be rinderpest, fortunately an error of diagnostic.

After its first appearance, the disease showed but little tendency to spread. But when it did, several towns were severe sufferers, and, if not exaggerated, reported as carrying away 4,000 bovines and 1,000 horses. The animals in these towns were not stabled, but left in open fields after working.

The disease presented itself under two different clinical forms, one in which predominated symptoms of paralysis (paralytic form) and another with those of excitement (furious form). Symptoms were alike in bovines and equines. The paralytic form was the most frequent. The symptoms lasted two or three days and were followed by gradually progressing paralysis behind. In the furious form manifestations of excited nature were shown from the start. The animals affected were very restless; kept first away from the others, and soon became aggressive and attacked men, as well as other animals. In some, elevations of temperature could be noticed, yet fever was not always present. There have been observed in some great hyperesthesia of the skin, and the animals would keep rubbing and scratching or even biting their own skin and tearing it.

The total duration was only of a few days and ended in complete paralysis.

As all the animals were sure to die, no treatment was resorted to. The meat and skin of the animals were often used, no bad results being reported.

The autopsy revealed no macroscopic lesions worth mentioning, only hyperemia of the meninges and of all the central nervous system.

The symptomatology suggested rabies, and this was somewhat confirmed by the history of the recent presence of rabid dogs in the vicinity. However, the examination of sections of the nervous specimen settled the question. The presence of numerous corpuscles of Negri, well characterized with the manifest infiltration round the capillaries and the proliferation of the cells

of the endothelial capsule, as found in animals dead with rabies, removed all possible doubts as to the nature of the disease. Besides them, submeningeal inoculations gave rabies to rabbits.

Another interesting point to notice is this: The number of mad dogs observed in the region did not seem in proportion with that of cows and horses affected, and consequently it is probable that wild animals may have acted as transmitters of the affection. Some people, worthy of belief, have reported to have seen in the fields bats flying in full daylight, attacking bovines and biting them. These cattle died a few days after.

It certainly would have proved very important to verify experimentally, if truly, these bats were rabid, and if they could transmit the disease.

* * *

ADRENALINE AND DETERMINATION OF SEXES.—The determination of the sexual nature in utero of foetal products has always been an interesting question, and its importance is very great when considered from the point of view of breeding in animals. Many are the theories advanced explaining it, and many suggestions have been made to solve the problem. Lately the question has received a new impulse, so to speak, by a communication which was made at the *Academie des Sciences*, in Paris, by Prof. Leon Labbé. The authority of his name and the importance of the subject have necessarily called the attention of interested parties, and as a result I have received from a friend from America a letter asking for information as to the application and value of the recent discovery. One of his best clients, extensive breeder of fine cattle, wanted to know what there was in an article which had appeared in a western journal and which promised, or at least suggested, the possibility of determining or obtaining a special sex at will. Information was asked. It is difficult to say for the present what value there is in the conclusion of Professor Labbé's communication. And to give final information, I send the following compte rendu extracted from the *Bulletins de l'Academie des Sciences*:

“ Action of the Suprarenal Glands Upon the Determination of Sexes.—Dr. R. Robinson believes that the suprarenal glands must have a primordial influence upon the organism of the egg and the sex of the embryo. Various kinds of facts are advanced in favor of this opinion.

“ 1. Adrenaline has a reducing influence upon the cardiac beatings of the foetus, and it is known by numerous observations that if the number of foetal cardiac beatings varies between 136 and 150 per minute the sex is feminine 68 times out of 100, and is always feminine if above 150. Therefore, by giving adrenaline to a mother in the first days of pregnancy there is every chance to influence the circulation, as well as the formation of the sex of the embryo.

“ 2. It is to be noticed that the superrenal glands seem to act, after birth, if not upon the sex at least upon some of the attributes. In female subjects having during life exhibited some of the masculine sexual attributes, such as beard, moustache, thick coat of hairs on the body, masculine tone of voice, etc., the post mortem has revealed alterations of the superrenal glands.

“ 3. Finally, having made researches for the presence of adrenaline in the blood and the urine of pregnant women, Dr. Robinson has observed that he could prognosticate with certainty, from the fourth month of pregnancy, the sex of the child to be born. When adrenaline is found—that is, when the functional condition of the superrenal glands of pregnant women is good—there is a male production; in the other condition it is a female.”

The field of experiments is open; there is certainly something which deserves attention; and yet it is not without some hesitancy that one can advance a positive opinion in the present condition of the question. If there is a possibility to arrive at the results indicated, experiments, and very careful, at that, will be the only way to settle it.

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BIBLIOGRAPHICAL ITEMS.—Drs. L. Van Es, E. D. Harris and A. F. Schalk, chief and assistant veterinarians to the North

Dakota Agricultural Station, have published in Bulletin No. 94 of the Agricultural College a pamphlet on "Swamp Fever in Horses."

This peculiar disease has already been the subject of many publications. Its history, etiology, pathogeny, symptomatology, etc., etc., have been considered and treated in the writings of many pathologists all over the world, and consequently it is well known. And yet it has given occasion to these three investigators of North Dakota for valuable experiments, information, discussions and new opinions, which are well presented in their Bulletin. There also are reproduced very good photographs which illustrate the text, and also several plates, with the various records, taken from a number of animals, subjects of experiments. The table of the entire bibliography relating to that disease which is in the pamphlet shows the amount of inquiries made by the authors.

The general conclusions are as follows:

1. Swamp fever is a disease of infection, transmissible by subcutaneous and intravenous injection and by ingestion through the alimentary canal.
2. The virus producing the disease is contained in the blood and urine of affected animals, but it is absent from the faeces.
3. The virus has thus far been demonstrated only in an ultra-microscopic form.
4. The virus is resisting to the severe freezing weather of our more northern climates.
5. While not denying the possible transmission of the disease in healthy animals by means of insects and parasites, animals contract the disease naturally, by the ingestion of food and water, contaminated by the urine of an infected horse.
6. The disease is essentially a septicæmia, anatomically marked and subserous and subendocardial hemorrhages in the more acute forms, by occasional involvement of the lymphnodes and spleen, by the degenerative changes in the parenchyma of heart, liver and kidneys, and probably also by certain alterations in the bone marrow of the long bones of the limbs.

7. The chief and most constant manifestations of the disease are fever and albuminuria. The former is remittent or intermittent, not uncommonly at more or less regular intervals, while the latter is transitory and frequently synchronous with the febrile exacerbations.

8. Many cases of swamp fever terminate fatally without a marked reduction in the red blood cells, a fact denying the popular conception of "swamp fever" being primarily an anæmia.

9. The blood of an animal may remain virulent for as long as 35 months after the initial infection without the infected horse manifesting any clinical evidence of the fact.

10. Such non-clinical infection carriers probably play an important part in the establishment of more or less permanent centers of infection.

11. Both trypan, blue and atovyl, are worthless in the treatment of the disease.

12. In the light of our present knowledge we have to depend upon such prophylactic measures as the destruction of diseased animals, segregation of suspects, care in introducing new horses in the stable, the safeguarding of food and water supply from urine contamination, pasture drainage and stable disinfection.

A. L.

THE "REVIEW" AND ITS READERS.

In coming to our readers with this, the first number of volume forty-one, we desire to thank them for their hearty co-operation during the making of the volume just closed—co-operation that has made it possible for us to give to them the best veterinary periodical that has ever been produced in *any* country; that has enabled us to make volume forty of the AMERICAN VETERINARY REVIEW what *all* its preceding volumes have been during the past nigh forty years, *every* veterinarian's magazine. Just as welcome because just as valuable to the practitioner as to the

scientific worker or laboratory man, and just as welcome because just as valuable to the laboratory man as to the practitioner. Yes, what all its preceding volumes have been for nigh forty years, except that it is greater and better in all respects than it has ever been. That is but natural; its resources for being better and greater have developed; the profession (of which it is a contiguous part) is bigger and greater than ever in its history, and the profession makes and supports the organ, through which it disseminates its thoughts and ideas, and through which it builds up its science. As a tangible comparison, both of the REVIEW and its co-operators, it may be said that in the last volume of but six numbers, 832 pages were required in which to publish their contributions, as compared with a thousand to twelve hundred pages for a volume of *twelve* numbers but a few years ago. And the quality or character of the literature has, of necessity, advanced as the science whose history it is recording has advanced. And yet there is not one article that has been published that is not of value alike to the practitioner and scientific investigator who is devoting his life to the unraveling of problems and the elucidation of perplexing questions, that they may be applied to everyday use by the practitioner. And does not the practitioner, on the other hand, furnish the material, the need and the impetus necessary to the scientific investigator, that he may have the inspiration to work? Such, most certainly, is the case. And it is *because* these two sides of veterinary science meet on equal ground in the AMERICAN VETERINARY REVIEW that it has always been the successful veterinary magazine that it is; it is both scientific and practical. Perhaps we should say practical and scientific, because we must admit that the practical side predominates. We notice, for example, in glancing over the last volume, fifty-three original articles and one hundred and eighty reports of cases (from every part of the world) met in actual, every-day practice—diagnoses, treatments, results, post mortems; (this is exclusive of editorials, correspondence, society meetings, etc.)—and, besides, every one of the original articles treat directly on subjects of interest to the practitioner. Some treat on

more *technical* questions than others; for example, the more modern laboratory tests for the diagnosis of glanders, etc., that the practitioner is not in a position to apply himself, but he desires to understand them, and to be in a position to explain them intelligently to his clients. Therefore, he welcomes an article of that order, presenting the matter carefully worked out for him, in his veterinary magazine, that he may read it in his leisure moments until he has grasped its principles. Now suppose the general practitioner *has* got a little the best of it in the character of the articles, that does not work any hardship on the scientific investigator; the field work furnishes him with material upon which to *make* his investigations. What would the man in the laboratory do if it were not for the man in the field, the practitioner, the diagnostician, who furnishes the laboratory the specimens and can intelligently explain their source? It brings us right back to our old stand, the REVIEW's happy combination of the science and the art of veterinary medicine (practical articles and case reports from daily practice), the practitioner always being its first consideration, the end to which all its means lead. In fact, the appreciation expressed by so many, *many* practitioners of the help and inspiration that the REVIEW is to them has actuated this response.

And so it will *continue* to help and inspire them; through their *own* efforts in recording their experiences in its pages (which are ever open to them), that they may profit by the work of each other; through the efforts of our large list of collaborators, made up from among the most learned men in the profession of this and other countries, who are ever willing to reduce scientific matters to their practical application, and through its editors, who are only human, and, therefore, not infallible, but who are always willing to sacrifice themselves, if necessary, in championing the cause of the profession on the side which they *believe* to be right.

KEEPING THE VETERINARIAN DOWN.

If a man has genuine abilities, he cannot be kept down. If a people, or a state, or a locality has genuine worth, it cannot be

kept down. If a profession is in reality a profession, and has genuine abilities, or work of value to do for the world, that profession cannot be kept down. The endeavor to keep down such a man, such a people, or such a profession, arouses such a rebellion that those who set up this opposition to growth and advancement may well tremble at the consequences. The endeavor to keep down such a man, such a people, or such a profession, is like attempting to shackle with chains the volcano Vesuvius, which will show fire and steam, lava and heat, as it has done for a thousand years, whatever you may do in your feeble attempts to stop it. That man is seriously in error, who thinks that he can trample under foot the man of genuine character who happens for the hour to be subservient to him, and who thinks he can keep down such a man. That ruler is foolish, that government is worse than foolish, that thinks it possible to keep down and hold in scorn a race or people where genuine talent of obvious usefulness is to be found. That government which recognizes the value to it of all other professions but one, discriminating against that profession, so that the galling shamefulness of its acts to it are enough to make the eyes well with manly tears, may expect no more than that that profession shall have its muscle and sinew strengthened, its brain heated to the intensity of the white light of the sun, and its moral nature mightily aroused to ungovernable resentment against the injustice of the foul discriminations, and rebellious against the torture of having its genuine value laughed at, its best intentions and its best work treated with scorn.

Keeping the veterinarian down. Yes, that, for full forty years, has been the policy of the War Department of the United States towards the veterinarian. The records show that the army veterinarian has done all that was required of him by the War Department, and, in innumerable instances, has gone much further than the requirements. Through his suggestions veterinary hospitals have been established at posts and in the field; remount depots have been instituted; purchases of animals have been made along rational lines; riding and saddlery have been immensely improved; rational practice of medicine and surgery

has been maintained; officers and men have been taught in hippological lectures the essentials of veterinary science; farriery has been improved. In short, in scores of ways the army veterinarian has been, as a professional man, a boon to the War Department. Moreover, the army veterinarian has, with his regiment, in time of danger, faced unflinchingly disease and death. He has acquitted himself with the fortitude of the soldier; has been maimed in limb, cut down, or died from disease in the army hospital or the field. What are his rewards for it? To be spurned by the War Department he serves; to be tittered at as a person of no consequence; to be kept down as if he were a man without knowledge, without genuine worth to the government or to his country.

How much longer will the veterinary profession tolerate this iniquitous policy of the War Department of keeping the veterinarian down? Is the veterinarian a foul thing, that he should be shunned? Is he a rough, uncouth, collarless boor, or is he a gentleman fitted out in regimental dress, a man of dignity, special knowledge and attainments, suitable for the company of officers and gentlemen? The veterinary profession must smite the policy of keeping the army veterinarians down and brand it as infamous. And, because the Committee on Military Affairs of the House of Representatives gave a patient hearing to Chairman Hoskins, of the Legislative Committee of the American Veterinary Medical Association on February 28 last, and listened attentively at that hearing to addresses by Captain J. A. T. Hull, Lieutenant-Colonel M. A. Piche (Canadian Army Veterinary Service), Dr. John R. Mohler (B. A. I.) and Dr. John P. Turner, and seemed to be much impressed with the statements and arguments brought to them by those earnest gentlemen, who had pleaded our cause well, it is not to be taken as a sign that the battle is won, or that any one person can slacken his zeal in the slightest degree. It means, on the contrary, that the battle for the passage of the bill to commission veterinarians in the United States Army (H. R. 16843) is on. And, while it cannot fail of passage if every veterinarian in the land will get his Represen-

tative pledged to support it, it will fail if you slacken your zeal now; if you do not stand behind your committee to a man, fighting until the last atom of opposition has been withdrawn. Relaxation on the part of one man may lose the fight. This is a crucial moment. The interests of the profession in a great department of the government are at stake. The bill was introduced in the Senate by Senator Penrose of Pennsylvania on March 12th, and was referred to the Senate Military Committee, a list of whose members is published on page 22 of this issue. In asking your Senators to support this measure in that body, endeavor to have them exert all their influences in having the bill favorably reported by that Committee.

RENEWED ACTIVITY IN THE HORSE-BREEDING INDUSTRY.

As a result of a combination of causes the horse-breeding industry seems about to spring into renewed activity throughout the country. One, and perhaps the initial cause, is the realization on the part of the American people, of the scarcity of available horses suitable for army remounts, which has recently been brought so forcibly to their attention by Major-General Wood, Chief of Staff, United States Army. Another is the realization on the part of those who have for the past few years replaced their horses and carriages by automobiles, that they have sacrificed all the individuality, style and finish that goes with a beautifully equipped "coach and pair," manned by a liveried coachman and footman, for the monotony of a "machine" that is like a thousand others, manned by an "engineer," who lacks all semblance of style or gracefulness; and at many, *many* times the cost of maintaining their horses. Still another, is the realization on the part of those employing large numbers of both light and heavy truck horses, that the promises of the builders of auto-trucks to furnish them with a more economical means of traction and transportation in general city trucking have not been

proven; but they have seen, on the other hand, that the horse is the more practicable and economical for their purposes. What has been the result of this realization? Thinking men all over the country have begun seriously to consider ways and means of restoring as rapidly and as economically as is consistent with the gravity of the situation the great horse-breeding interests of our country that have been neglected for the past few years by many who have been deluded by the promises and exploitations of capitalists who have endeavored to force their visionary "horseless age" upon the people, in an effort to create a market for their commodity. We do not foretell an "autoless age" in the immediate future, nor perhaps ever, but we *do* predict a more sane view of the situation by those whose interests are involved.

You can only hold men by their interests. Sentiment for the horse, or prejudice against the machine, can have no influence and must be left entirely out of the question. Their interests and not sentiment have set the farmers of New York State thinking, since they have realized that they have allowed the horse-breeding industry of that great State to lapse 80,000 head behind their own annual requirements, as pointed out to them by Professor Harper of Cornell University. Just think of it, one of the best States in the Union for horse-raising, on account of its fertility and vast acreage of level grazing land, through negligence having to purchase from outside its borders 80,000 head in one year, for its own uses, at a cost of \$16,000,000, when it ought to be selling a surplus after supplying its own markets. That the realization has quickened the interests of the farmers in the Empire State is evident from the movement started by Professor Harper for the organization of a Horse Breeders' Association in that State, and by the action taken by Governor Dix in directing the Commissioner of Agriculture to take steps to learn what methods could be adopted for the purpose of stimulating this very important branch of animal husbandry on the part of breeders and farmers in the State. And we have no doubt but what this general interest in the horse-breeding indus-

try has been awakened all over our great country. It is the natural outcome of demand. Demand not alone for army remounts. Those we want to take seriously into consideration and to accumulate, so as to be prepared to replenish the supply; they cannot be manufactured when actually needed, and their "breeding" is something we should like to have discussed through these columns, as we feel sure there are plenty of men in the veterinary profession possessed of good ideas on the subject that should be "aired." But it is encouraging to the general practitioner to contemplate the fact that the demand for draft horses and general-purpose horses is on the increase, and there is also some increase in the demand for carriage horses, and a brisk demand for saddle horses. But to return to the draft horse, we might cite many instances in support of our statement at the outset that the auto-trucks had not filled the place in city trucking their advocates claimed for them; but our space is limited, and we will confine ourselves to one for the present. A large contractor whose headquarters is in the same city as the REVIEW recently placed an order for five hundred fancy drafters to add to his stock of horses. This gentleman explained that after experimenting with mechanical substitutes for the past nine or ten months, he was convinced that horses were more reliable and economical than machines, and henceforth he will stick to the horse; explaining that his entire system was to be changed to three-horse teams; having found this sort of equipment to work better than any other in moving earth, rock and cement. With dump-wagon, harness, blankets and everything complete, of the high grade which he uses, these three-horse turnouts cost about \$2,000. One of these turn-outs will move off gracefully with six tons of material, and 98 per cent. of the equipment is in a serviceable condition at all times, and if a horse or a driver is disabled it is always easy to replace him in a few minutes, without putting the whole equipment out of service, as is the case when something goes wrong with an auto-truck. The president of this firm further states that there are no repairs worth talking about (an immense item with the auto-truck), and that

there is little deterioration in value. On the contrary, horses bought right, usually improve for a year or two, and it is not an uncommon experience to sell them at auction after completing a contract of perhaps two years' duration for more than they cost when green. On an average, however, he states that horses, trucks and harness depreciate 10 per cent. a year, and that much is charged up against them on the books of the company. The type of horses used by this company weigh from 1,550 to 1,750 pounds. The above citation is not a fancy mind-picture, but are the conclusions arrived at as the result of a wide experience by a practical, reliable business man, held only by his interests; sentiment or prejudice playing no part whatever. And we give it to our readers as encouraging evidence of the work-horse's ability to "hold his own" against the auto-truck. Perhaps, too, these arguments may serve to influence a wavering client who is considering the advisability of replacing his horses by mechanical devices. Encourage the breeding of horses in your district; they will find a ready market in the big cities.

INCREASE RATHER THAN REDUCE CAVALRY SERVICE IN U. S. A.

The action taken by the House of Representatives to reduce the strength of the cavalry in the United States army by five regiments, or one-third of this arm of the service, is one of grave concern; especially at this time when the country in general has just awakened to the realization of the great scarcity of horses suitable for remounts; the troops of the National Guard in many of our States not being able to obtain suitable horses upon which to drill their men. This condition of affairs makes it imperative that the United States Army not only *not reduce* its cavalry, but *increase it*, so that in the event of war (for which a nation must *always* be prepared) enough trained cavalry men, mounted upon trained horses, would be available to move *immediately* and prevent a repetition of such a disaster as

happened to England in the South African War, which was practically at a standstill until enough mounted troops could be gotten to the scene of action. The United States does not pretend to keep a large standing army, our policy being to maintain a nucleus which is rapidly augmented in time of war from volunteer recruits; but we cannot recruit the cavalry arm of the service at short notice. The horses must be procured (not the least difficulty at the present time); they must be trained to the service, and men must be trained to ride them, and ride them intelligently and well, so that they will assist and not hinder at a crucial moment.

So that, in view of the difficulty that would be experienced in recruiting our cavalry from the National Guard, because of the scarcity of horses, we believe it imperative that we maintain our eleven regiments of cavalry with its 8,580 men (which we would like to see increased to 10,000), and urge upon our readers the necessity of bringing the matter before their representatives in the Senate to whom it will soon be referred.

BILL TO COMMISSION VETERINARIANS U. S. ARMY (H. R. 16843) referred to Senate Committee on Military Affairs (Senate Bill No. 5792)—Henry A. duPont, of Delaware (Rep.), Winterthur, Del.; Francis E. Warren, of Wyoming (Rep.), Cheyenne, Wyo.; Joseph M. Dixon, of Montana (Rep.), Missoula, Mon.; Frank O. Briggs, of New Jersey (Rep.), Trenton, N. J.; Norris Brown, of Nebraska (Rep.), Kearney, Neb.; Simon Guggenheim, of Colorado (Rep.), Denver, Col.; Joseph L. Bristow, of Kansas (Rep.), Topeka, Kan.; Wesley L. Jones, of Washington (Rep.), North Yakima, Wash.; William Lorimer, of Illinois (Rep.), Chicago, Ill.; Murphy J. Foster, of Louisiana (Dem.), Franklin, La.; Joseph F. Johnston, of Alabama (Dem.), Birmingham, Ala.; James P. Clarke, of Arkansas (Dem.), Little Rock, Ark.; Robert L. Tayler, of Tennessee (Dem.), Nashville, Tenn.; George E. Chamberlain, of Oregon (Dem.), Portland, Ore.; Gilbert M. Hitchcock, of Nebraska (Dem.), Omaha, Neb.; John Sharp Williams, of Mississippi (Dem.), Benton, R. F. D. No. 1, Miss.

ORIGINAL ARTICLES.

HOW WILL THE ERADICATION OF THE CATTLE TICK BENEFIT THE PRACTICING VETERINARIAN?*

BY A. C. STEVER, VETERINARY INSPECTOR, U. S. BUREAU OF ANIMAL INDUSTRY.

Success for the veterinary practitioner in any community depends largely upon the number and quality of animals in that section.

Progress along any line, especially the livestock industry, depends upon the breeding of high-class stock, either grades or pure-bred. This condition of affairs in the section of the United States quarantined on account of the Texas fever tick can only be accomplished through the eradication of the tick, because cattle owners in this area will not, and I might add cannot, profitably make a success of breeding and marketing cattle.

In the Middle West during the early nineties horses and mules were cheap, on account of the national panic at that time and the large number of inferior animals, consequently hundreds of veterinarians left their practices in the rural districts and took up their abodes elsewhere. Fortunately for some who remained, however, an interest in cattle raising was stimulated; cattle were selling high. The farmers became interested, started breeding good cattle, and as a result the veterinarian who remained in those districts soon enjoyed a lucrative cattle practice.

Georgia—the entire South, for that matter—is distinctly an agricultural section, and in the rural districts the veterinarians must have a limited practice, because, as a rule, the small farmer

* Presented at the Fifth Annual Meeting of the Georgia State Veterinary Medical Association, Atlanta, Ga., December 21, 1911.

is not interested in cattle raising and very little attention is paid by him to the breeding of other livestock on the farm.

I believe you will agree with me that in considering the natural resources of the State we should have many more good cattle, also many more veterinary practitioners.

Tick eradication, in my opinion, is really the foundation of progressive agriculture, because we need more and better cattle. If the farmer could raise cattle profitably, surely he would realize the benefits to be derived from saving barnyard manure and thereby increase the fertility of the soil; this really should make the farmer more prosperous and independent.

A great deal has been said lately in the various newspapers throughout the State, also the agricultural papers, regarding "the back-to-the-farm movement." Cattle breeding has been given some attention, but not what it deserves.

Corn shows are being held, and I believe every prize acre of corn in the "Boys' Corn Clubs" was liberally supplied with barnyard manure. I am also sure that soil liberally fertilized will combat some of the various plant diseases of cotton, because it will cause it to mature much quicker.

I am surprised (not agreeably, though) at the very little interest manifested in the work of *tick eradication* by the practicing veterinarians, especially those located in the infected areas. It seems as though they have given this important subject very little consideration and thought, in fact, they generally lent a deaf ear, just like the natives in the infected territory, who invariably say, "We have seen ticks all our lives," and, of course, add, "We expect to continue seeing them until we die."

I believe one purpose of this association is to better the general existing conditions, especially that pertaining to the livestock industry of our State; therefore, as Dr. Bahnsen so aptly states on the program of this meeting, "Your interest is at stake. Parasites alone expect to reap where they do not sow." And, gentlemen, it is your duty, each and every one of you, not only for the sake of humanity, but you owe it to the veterinary profession, to assist in this great work of tick eradication, in order

that the infected area may be freed as quickly as possible, and that the farmers of this territory may make a success of cattle raising.

While supervising the work in middle Georgia and other sections of the State I personally came in contact with dairymen who had infected premises. These people were finally persuaded to eradicate ticks from their farms. After this was done, the cattle greatly improved in condition, the owners became interested, asked for the tuberculin test, also tried to establish sanitary dairies, and were really proud of the fact that they had accomplished so much along this line. Cattle in the same section enhanced in value and the cattle owners paid more attention to livestock ailments. Even negroes quite a distance from the county sites became interested and replaced their scrub bulls with pure-bred Herefords in some instances.

I understand in Greene County, Ga. (this is claimed to be one of the leading dairy counties in the State), that they ship annually to this city about \$100,000 worth of dairy products. Of course this is fine, and the natives down there will tell you that "the dairyman is the backbone of that community." In fact, general appearances of the dairyman's premises in that section indicates success and progress. Yet when you consider the natural resources of the State, together with the fact that we import annually between eight and ten million dollars' worth of dairy products, it would seem to me that Greene County should ship at least ten times the present amount.

From personal experience I believe that tick eradication stimulates the farmer to engage in the breeding of good cattle; it does certainly encourage him to realize the importance of close attention along veterinary medical lines. I make this statement because of the numerous inquiries, while in the field, on this subject.

It is an admitted fact that the eyes of the nation are turned southward, also that after the removal of this great barrier high-class stock can be raised as cheaply and to a better advantage here than in any other section of the country.

It was not my intention to talk on tick fever, but, as previously stated, I believe the practicing veterinarian is not sufficiently interested in this work; also that at this time the entire South is waging a war against the common enemy. I have thought it advisable to prepare the following paper on "Tick Fever":

TICK FEVER.

Synonyms.—Texas fever, southern cattle fever, red water, black water, distemper, acclimation fever, murrain, dry murrain, yellow murrain, bloody murrain, Mexican fever, Spanish fever, splenic (or splenetic) fever, protozoan cattle fever, hemaglobinuria, tristeza, paludism of cattle, bovine periodic fever, bovine piroplasmosis or bovine malaria, is a specific infectious disease of the blood of cattle caused by the development and activity of minute animal parasites (protozoa), which are conveyed to the affected animals by means of the cattle tick, the *Margaropus annulatus*.

Ticks, What Are They?—A tick is an obligatory parasite which attacks mammals, birds and reptiles. They do not appear to be so strictly confined to certain hosts as they do parasites in general, and the various species show a decided predilection for certain hosts.

Varieties of Ticks Common in the United States.—*Margaropus annulatus* (Texas fever or cattle tick), *Ixodes ricinus* (castor bean tick), *Dermacentor reticulatus* (net tick), *Dermacentor electus* (American dog tick, also called wood tick), *Amblyomma americanum* (Lone Star tick), *Ornithodoros megnini* (ear tick), *Argas minatus* (chicken tick), *Ixodes hexagonis* (European dog tick), *Dermacentor venustus* (Rocky Mountain spotted fever tick).

A Short Description of the Life History of the Margaropus Annulatus.—The large olive-green female tick, when fully matured and engorged, drops to the ground, and if conditions are favorable lays in from two to four days in summer to ninety-eight days in winter as many as 5,000 eggs.

After egg-laying is completed the tick dies in a few days. The eggs are small, elliptical-shaped bodies, at first of a light amber color, later changing to a dark brown, and are about one-fiftieth of an inch in length, and are covered with a sticky secretion.

After a time, ranging from 6 days in summer to 188 days during the fall and winter, the eggs begin to hatch. From each egg issues a small, oval, six-legged larvæ or seed tick. The seed tick usually remains more or less quiescent for several days, after which it shows great activity, ascends the nearby vegetation and collects on leaves. The seed tick during its life in the pasture takes no food, and consequently does not increase in size, and unless it reaches a host to take up the parasitic portion of its development dies of starvation. The endurance of seed ticks is very great, however, as they have been found to live nearly eight months during the colder part of the year.

Development on Cattle.—The parasitic phase of development begins when the larvæ or seed ticks reach a favorable host, such as the cow. They usually attach themselves to the skin of the escutcheon, the inside of the leg and flanks and to the dewlap. They at once begin to draw blood and soon increase in size. In from 5 to 12 days we have a molting stage. The new form has eight legs instead of six and is known as a nymph. In from 5 to 11 days after the first molt the tick again sheds its skin and becomes sexually mature. It is at this stage that males and females are with certainty distinguishable for the first time.

The male emerges from his skin as a brown, oval tick, about one-tenth of an inch in length. He has reached his growth and goes through no further development. He later shows great activity, moving about more or less over the skin of the host. The female is slightly larger and seldom moves far from the original point of attachment.

After mating, the female increases very rapidly in size, and in from 21 to 66 days after attaching to the host as a seed tick she becomes fully engorged and drops to the ground, to repeat the cycle of development.

History and Distribution of "Tick Fever."—The place of origin of this disease is unknown; it is claimed to have existed for centuries in some countries of Europe, among which are mentioned southern France, Italy, Turkey and along the Danube river in Roumania. It is also prevalent in the West Indies, Mexico, Central America, South America, Australia, Africa, Ireland, Finland, Germany, southern Russia, India, China, Japan and the Philippine Islands. It was probably introduced into the United States with the importation of cattle by the Spaniards during the early colonization of Mexico and the southern United States.

It seems to have been described first in this country by Dr. J. Pease toward the close of the eighteenth century. At that time a severe outbreak occurred in Lancaster County, Pa., and Pease, after investigating the condition, claimed it to have been due directly to the shipment of North Carolina cattle into the State.

Experience soon showed that the result following the transportation of southern cattle into the northern States was the death of all northern cattle along the roads which southern cattle had traveled, although the latter animals remained healthy. In 1868 Texas cattle shipped to Illinois and Indiana early in the summer caused enormous losses, and cattle shipped from these States to the East died during transportation. These great losses soon prompted the study of the disease by many scientific men, whose investigations soon established the great danger of allowing southern cattle to pass into the northern States, and finally resulted, in 1885, in the location of the infected district and the establishment of the Texas fever quarantine line in 1891 by Dr. D. E. Salmon, which have been the most important steps yet taken toward controlling the disease.

Smith was the first (1889) to recognize and describe as protozoa the intracorpuseular parasites, which are the direct causative agents of the disease, although Babes had previously diagnosed them as bacteria (*Hematococcus*) for Starcovici, who found them in the blood of Roumanian cattle in 1888. In 1889 and 1890 Kilborne, by conclusive field experiments, proved the

presence of the cattle tick to be essential in transmitting the disease.

It is interesting to note that this was the first experimental proof furnished on the subject of diseases borne by insects, or diseases that can be carried from one animal to another only by an intermediary host. This mode of transmitting infections has since become quite familiar to the public by the discovery that certain species of mosquitoes spread malaria and yellow fever to man.

(To be concluded in our next issue.)

AN interesting paper on "*Recent Methods for the Diagnosis of Glanders*," from the pen of Professor Hadley of the University of Wisconsin, prepared, its author states, for the interest of the every-day practitioner, will appear as a leading article in our May issue.

DR. S. C. FREELAND, Marion, Kan., said in renewing his subscription: "We set great store by the REVIEW and look anxiously for each issue." We imagine the last number must have been particularly welcome, as the doctor stated at time of writing (March 8) that the snow was "ten feet deep on some roads, and still drifting."

PRACTITIONERS APPRECIATE THE REVIEW—Dr. J. B. L. Terrell, Dresden, Tenn., vice-president of the Tennessee Veterinary Medical Association, says: "I don't know how any busy practitioner can get along without the AMERICAN VETERINARY REVIEW; I have thirteen volumes bound, they are so convenient for ready reference. I would advise any veterinarian to have them bound."

DR. LOUIS P. COOK, president of the Ohio State Veterinary Medical Association, is a candidate for the Ohio State Senate. A desire to be in a position to serve the veterinary profession of Ohio led him to seek the nomination. The time and energy given to the campaign, and the great sacrifice of time afterward, if elected, is surely a great deal for a man to do for his professional brothers in his state, and should insure the steadfast support before, and gratitude after election, of every one of them.

AN UNUSUAL CAUSE OF UDDER DISEASE.*

BY LOUIS A. KLEIN, UNIVERSITY OF PENNSYLVANIA.

About the middle of November, 1911, the cows in a large dairy herd began giving milk containing small flakes and white, jelly-like clumps. At first only a few cows were affected, but the number gradually increased, until finally 90 per cent. of the cows gave milk of this kind. At this time the clumps and flakes were so numerous that the cotton strainer was clogged and the milk would not pass through. Usually the flakes were observed in the first part of the milking, but in some cases they did not appear until the middle or near the end of the milking. In a number of cases the condition was only temporary, disappearing in two or three days, but more often it persisted and the flakes became larger and more numerous. Some cows had only one-quarter affected, others two, three or all four. Difficulty was often experienced in getting the milk started through the teat of the affected quarter, the canal apparently being blocked. Frequently this was the first sign of the trouble. The feeds were suspected by the manager as being responsible, but the ration was changed several times without effect.

Two or three weeks after the condition appeared the writer made an examination of the herd. Forty-eight cows were found to be giving milk containing the white, jelly-like clumps and flakes. These, like the others in the herd, were in good physical condition and exhibited no pronounced symptoms of disease. There was no swelling of the udder, no pain on pressure, and no heat, except in one cow the point of the teat was rather hot. In a number of cases a red ring was observed around the opening of the teat canal, indicating congestion and swelling of the mucous

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membrane. In a few cases the mouth of the teat canal was more or less closed by a scab of dried exudate or milk, and in several others the first stream of milk was divided or deflected from the normal direction, all pointing to the presence of a catarrhal condition of the membrane lining the teat canal and, perhaps, also of the mucous membrane of the cistern. In one cow pressure on the end of the teat forced a drop of mucous from the opening of the teat canal. There were twelve cows, which were among the first affected, in which a thickening of the mucous membrane of the cistern could be detected, and in several of them there was also induration of the lower part of the gland tissue—evidences of the connective tissue formation associated with chronic inflammation.

These alterations are symptoms of catarrhal mastitis, in which disease there is a similar change in the milk, and the gradual spread of the condition through the herd suggested the presence of the streptococcic, contagious form of catarrhal mastitis. But the milk from the herd had been examined once a week by a bacteriologist, and not only had no streptococci been found, but at several of the examinations made during the prevalence of the trouble the bacterial count was lower than usual, as is shown by the Table B, given below. Moreover, the distribution of the affected cows through the herd was not such as to indicate transmission of the infection in milking. Samples of milk were taken from three cows in different stages of the condition, centrifuged, and the sediment examined microscopically, and the mucus pressed out of the teat opening of the cow mentioned above was also examined microscopically, but no streptococci could be found and very few leucocytes. Very few bacteria or cells or any kind were present. These samples were centrifuged on the farm with a hand centrifuge for urine and blood work, but the results were subsequently confirmed by the examination of these samples of milk in the milk hygiene laboratory of the Veterinary School, in which work I wish to acknowledge the co-operation of Dr. H. C. Campbell. . These three samples were altered in different degrees, No. 1 showing small flakes, No. 2 larger flakes and more

numerous, and No. 3 a few small flakes. The udder was cleaned as usual, the teats wiped with alcohol and milk drawn from each quarter into clean bottles, the fore milk being included. The examination was begun when the milk was about twenty-four hours old, and the results were as follows :

TABLE A.

No. of Sample.	Per cent. Acid 12/1/11.	Per cent. Acid 12/8/11.	Alcohol Test.	Catalase test (No. c.c. o in 2 hrs.).	Reductase (MB) test. (Time of reduction).	Per cent. Sediment and Leucocytes (Trommsdorff Method).
1.	0.31	0.32	....	1½ c.c.	36 hrs.	0.01
2.	0.3	0.342	....	3 c.c.	20 hrs.	0.01
3.	0.288	0.316	....	3 c.c.	36 hrs.	0.02

No. Leucocytes per Field (Stokes method)	Presence Streptococci Microscopically	Fermentation Test	No. Bact. per c.c.
1.	4	24 hrs. no curd 36 hrs. lactic acid curd....	1250
2.	5	24 hrs. no curd 36 hrs. lactic acid curd....	750
3.	7	24 hrs. no curd 36 hrs. lactic acid curd....	2500

Since these facts and circumstances did not indicate the operation of bacteria, and changes in the feed had had no influence, it became necessary to look further for the cause. During the examination of the cows I observed that many of them showed symptoms of irritation of the skin of the udder, especially about the base of the teats. The skin in this region was dry and stiff, scaly, and sometimes swollen or thickened. In many instances small scabs were present, indicating the previous existence of a crack or fissure, and in some cases small abrasions or excoriations were present. The condition resembled in all respects a mild acute or subacute inflammation of the skin. Of the forty-eight cows showing the milk changes or teat symptoms, indicating the

presence of catarrhal mastitis, thirty also exhibited these alterations in the skin covering the base of the teat. I therefore concluded that there was probably some connection between the two, and directed my investigation along that line.

Special efforts are made on this farm to produce the best milk possible, and an unusual amount of work had been done to get the cows as clean as possible before milking. After they had been thoroughly brushed and all the dirt removed that could be gotten off in this way, the rear portion of each animal was washed. The croup, buttocks, flanks, the legs (inside and out, down to the claws), the tail and the udder were washed with a mild disinfectant solution. The solution was used freely, about a twelve-quart bucketful being used to every eight cows, and was applied to the udder with a cloth and to the other parts with a stiff brush. After this, the udder was washed a second time with clean water, to remove the disinfectant solution. When the cleaning process was completed, the washed surfaces were quite wet, and remained in this condition until dried by the air. The cows were subjected to this treatment twice each day.

This method of preparing the cows for milking was not adopted until May, 1911, and had, therefore, not been previously tested in cold weather. The udder trouble began about the middle of November, just after cold weather had begun. There were more affected cows in the end of the stable where the doors were frequently opened and kept partly opened for ventilation than in the other end where they were almost constantly closed. The irritated condition of the skin observed on the udders was just at the point where fluids placed on a clipped udder would collect by gravitation, and which, therefore, would remain wet longest. It is well known that repeated exposure of the skin in a wet condition to cold will produce an inflammatory condition. Exposure of the udder to cold is also one of the recognized causes of inflammation in that organ. Moreover, at the point where the skin alterations were observed, the mucous membrane lining the cistern is only separated from the skin by a single layer of fibrous tissue and the subcutaneous and submucous connective tissue.

These facts all pointed to the exposure of the wet udders to the cold atmosphere as the cause of the skin alterations, and, also, as the probable cause of the catarrhal condition in the udders. The strength of the disinfectant solution was not sufficient to cause irritation. It therefore seemed necessary to stop the use of such excessive quantities of water in cleaning the cows. It was recommended that the cows be cleaned as thoroughly as possible by dry-brushing, only using water when necessary to wash off wet manure, and that the udders be wiped with a cloth dampened with a 2 per cent. solution of sodium carbonate and then anointed with a small amount of vaseline. This treatment, it was believed, would protect the milk from contamination during milking equally as well as the washing process, and would also have a beneficial influence upon the skin of the udder and, perhaps, also, indirectly upon the udder trouble. Each cow showing changes in milk, except the twelve showing thickening of the mucous membrane and induration of the gland tissue, was also to receive 3 drams of bicarbonate of soda and $1\frac{1}{2}$ drams each of sodium sulphate and potassium acetate upon the feed twice daily. Bicarbonate of soda and sodium sulphate were prescribed because they are recommended in catarrhal conditions, and potassium acetate was included because it was thought its diuretic action would be of service in eliminating substances that were irritating the mucous membranes of the udder. More effective internal and local remedies could have been selected, but in prescribing treatment the number of affected animals had to be taken into consideration, together with other circumstances. The twelve cows above mentioned were separated from the others and given special treatment.

The recommendation to change the method of preparing the cows for milking was regarded with some doubt by the manager at first, because he feared the proposed method would not be as effective as the old in keeping bacteria out of the milk, and his uncertainty was increased by the opinion of a prominent bacteriologist, that if the system of washing was abandoned the number of bacteria in the milk would be increased. It also required

a day or two to get the material and make the necessary arrangements, and two or three days longer for the men who were cleaning the cows to learn the difference between washing the udders and wiping them with a damp cloth, so that it was the 11th of December before the new method was put into operation completely. A few days later the manager reported no additional cases of the udder trouble had been discovered for a day or two. The effect upon the bacterial count may be seen by examining the table given below. The samples for examination were all taken from the general stock after the milk had been delivered in the city.

TABLE B.

Date of Exami- nation.		No. Bact. Per c. c.	Date of Exami- nation.		No. Bact. Per c. c.
Nov.	6.....	600	Jan.	2.....	300
"	14.....	1000	"	8.....	sterile
"	21.....	400	"	16.....	900
"	27.....	800	"	23.....	900
Dec.	6.....	1500	"	30.....	600
"	12.....	400	Feb.	7.....	sterile
"	18.....	1200	"	13.....	sterile
"	26.....	700			

On December 29 the herd was again examined and it was found that a great improvement had taken place in the udders externally, with the exception of one cow. The skin, especially at the base of the teats and over the teats, was soft and pliable. The udders were also improved internally, as the number of cows producing milk containing flakes had decreased very considerably. The cow that had not improved showed thickening of the mucous membranes and induration of the gland tissue and was placed with the twelve previously separated. One of the latter had recovered and was put back in the herd; the others showed little, if any, improvement, and it was decided to send four of them, which were nearly dry, to the butcher.

Another examination of the herd was made on January 22, about three weeks later, and it was found that the number of cows affected with the udder trouble had decreased to less than

2 per cent. of the milking herd. The stable foreman stated that the "milkers" found milking easier with the new method of cleaning and preparing the cows for milking and were not bothered with "chapped" or "cracked" teats, or sores on the teats. He also stated that the cows were milking better than formerly. Of the eight cows remaining of the twelve separated from the herd four showed some improvement.

At the time of the last examination, February 19, these four cows had recovered and the other four showed some improvement. The udders of the cows in the milking herd were in good condition externally and internally; only one cow of the 321 showed chapped teats, and the milk of only a very few contained small flakes. When the treatment was begun the flakes and white, jelly-like masses could be found in the milk from 90 per cent. of the cows, and in twelve cows thickening of the mucous membranes and induration of the gland tissue had taken place. The results of the treatment, therefore, confirm the conclusions with regard to the cause.

According to H. Weigmann (*Mykologie der Milch*, p. 123), the presence of flakes in milk may be due to the drying of milk in the opening of the teat canal or in the folds of the mucous membrane of the teat canal, or to catarrhal mastitis, especially inflammation of the mucous membrane of the milk cisterns and the large milk ducts. Where the flakes are the dried residue of milk it would seem that they would be present only in the first streams from the udder, but this was not always so in the cases under discussion, and, moreover, in several cows symptoms of congestion and swelling of the mucous membrane of the teat canal were observed. Rühm (*Zeitschrift f. Fleisch- u. Milchhyg.*, p. 17, October, 1910) states that milk may contain flakes in consequence of the introduction of "plugs" of bacteria into the teat opening.

The occurrence of mastitis without the intervention of bacteria seems to be rather rare, Kitt (p. 203, *Path. Anat. der Haustiere*) says "only a few cases have been observed in which the milk from the affected udder was free from bacteria, and, therefore,

due to some cause other than bacteria, *e. g.*, chilling." In the milk examined there was an absence of the bacteria usually concerned in mastitis, and leucocytes were not present in excess of the number found in normal milk. According to Guiteras (p. 62, Notes on Path. and Bact.), there is a mucous catarrh, in which we have chiefly a stimulation of the normal function of the cells, *i. e.*, an excessive secretion of mucus, with few leucocytes present. This would seem to be the condition present in these cases.

DR. T. WRIGGLESWORTH, Eau Claire, Wis., writes: "I take pleasure in enclosing my check for \$3 to renew my subscription for the REVIEW; permit me to express my appreciation of your efforts, as I believe we have in the AMERICAN VETERINARY REVIEW the very best veterinary journal published."

IN our December number we published a report of the "Revised Veterinary Association of Kentucky," as Dr. Robert Graham, its secretary, was pleased to call it, but from the account of their February meeting, as reported by Secretary Graham and published on page 125 of this issue, they might very appropriately have used the term "revived." For surely the program enacted is suggestive of revivification.

A MISAPPREHENSION.—Constantly we are told that the horse is a vanishing factor in modern life. He is going, going,—soon will be gone. Here are the facts: In 1900 there were 21,203,901 horses in the United States. By the census report of 1910 there were 23,813,850, a gain of 1,609,949. In 1900 there were 3,438,523 mules in the United States. In 1910 there were 4,453,943, a gain of 1,015,420. The total value of the horses, mules and colts reaches the sum of \$2,598,699,908, leaving only \$2,296,248,874 as the total value of all other live-stock, including cattle, sheep, swine, asses, burros, goats, poultry and bees. While cattle increased in total value during the decade less than 1 per cent., horses and colts increased in total value 132 per cent., and mules and colts 166 per cent. We think the humane societies would better not go out of business right away.—(*Our Dumb Animals.*)

MUNICIPAL MEAT INSPECTION.*

By T. E. MUNCE, DEPUTY STATE VETERINARIAN, HARRISBURG, PA.

Some of you may wonder, especially those of you who are engaged in general practice, why the question of meat inspection is given such a prominent place each year on our program. There are various reasons for keeping the subject before the members and having matters pertaining thereto discussed at our meetings. It is now generally recognized that in order for an individual to properly fill the position of meat inspector (I refer now to a position of independent responsibility) he should be a qualified veterinarian. If then it is necessary, in order to properly fill such a position, to have, among other things, adequate veterinary training, the subject of meat inspection should be a part of our program.

This is not, however, to my mind, the most important reason for keeping the subject alive by frequent discussions at the meetings. If meat inspection, in order to be properly carried on, comes within the jurisdiction of veterinarians, then, most assuredly, they should see that the consuming public in their respective localities is adequately safeguarded against unwholesome meats. This, like all other similar matters, can best be done—in fact, can only be done—by carefully educating the public so that the need of inspection may be made manifest.

The State meat inspection service has been trying, in so far as it is possible, to co-operate with the Federal meat inspection service. In fact, broadly speaking, we might regard the State inspection an auxiliary to the Federal inspection. A number of our municipalities have provided for local meat inspection, some of which are independent of the State, while others have adopted

* Presented to the Pennsylvania State Veterinary Medical Association, March 6, 1912, at Philadelphia.

ordinances in accordance with what is known as the State meat inspection law of 1907, and are co-operating with the State Livestock Sanitary Board. We are of the opinion that in order to render the best possible service in protecting the public against diseased and unwholesome meats the various local municipal meat inspection services should co-operate with and be an auxiliary to the State service, just as the State is to the Federal service. Working, then, with this end in view, the question arises, How are we going to proceed so that the system will be uniform and all localities of the State adequately protected? In our judgment, the only practical solution is for the cities and towns to provide local inspection with municipal slaughter houses. This is not by any means a new scheme, but, on the other hand, it has been tried out, not only in this country, but in various countries of the Old World, and with great success, not only from a financial point of view, but other ways.

Unfortunately, the butchers, in some localities at least, have been unfairly dealt with by the local officials adopting ordinances and regulations which forbid the erection and operation of a slaughter house within the borough or city limits. On account of this, the only thing for the butcher to do is to go outside, away from the city water and sewer connection, both of which are very necessary, and build his slaughter house. In such cases he usually selects a site some backwoods, perhaps near a spring, where he can get enough water to wash the carcass, but seldom sufficient to properly cleanse the slaughter room. Again, he has to contend with the question of proper drainage and disposal of his refuse and offal. Operating under such conditions, there is always a temptation to keep hogs to eat the offal and refuse, which is not only unsanitary, but is expensive in a great many cases, on account of the hogs developing such diseases as cholera, tuberculosis, etc. It is not uncommon to find in offal-fed hogs echinococcus cysts in the liver, to say nothing of other serious conditions traceable to this filthy practice. Experience has shown that if clean, wholesome meats and meat products are to be produced and placed upon the market, it is absolutely necessary for the

slaughtering to be done and the meats prepared and stored under favorable conditions. In other words, not a building located in the rural districts and in a ravine or hollow, with practically no water and drainage, and often, too, on leased land, but treat the abattoir the same as any respectable and important municipal utility—issue the owners a permit to build within the city or town, so that they can get safe and proper sewer connection and within reach of the city water line, both of which are indispensable—then require them to keep the establishment and surroundings clean. Our records show that the rural slaughter houses are, as a whole, more unsanitary than those located in the cities and boroughs. The reason being as stated above—lack of proper facilities for keeping them clean. By all means be consistent in the matter and do not expect or demand from the butcher a wholesome product which he has been forced to prepare under unfavorable conditions.

In order to give those of you who are not familiar with what the cities of other countries are doing in regard to municipal slaughter houses, I quote, in part, from a report from Amsterdam, Holland: Consul F. M. Mahin says that a municipal abattoir is not only feasible, but absolutely necessary, and that the city abattoir is one of the largest and most important enterprises. The buildings comprise two slaughter houses for cattle, a slaughter house for hogs and one for horses, three stables for cattle and three each for hogs and horses. There are other buildings also for the treatment of waste and hog hair, blood drying, tripe boiling, a forge, the sterilization of meat, a laboratory for microscopic examination and an administration office. In addition to the above, a space is provided for a cattle market, café and stables for horses and vehicles. The latter would not be regarded as necessary in this country and could be dispensed with. The total surface covered by the buildings and cattle market exceeds 100,000 square yards. All the slaughtering of animals for food in Amsterdam must be done there. Some meat slaughtered elsewhere is brought to the city, but it must be examined at the city slaughter house and be stamped the same as meat slaughtered

there. All condemned meat is rendered into fertilizer, as is required in this country. The slaughtering is not done by the city, but by the livestock owners, who pay for the use of the abattoir sixty-four (64) cents for each steer, cow or horse; thirty-four (34) cents for each fat calf or hog, and ten (10) cents for each sheep, young calf or goat. A charge is made of about one-fifth ($1/5$) of a cent a pound for beef and pork not slaughtered there and about one-tenth ($1/10$) of a cent a pound for other meat. The meat is carried from the abattoir to the shops in specially arranged wagons. About 151,000 animals are slaughtered annually. The capital invested in the grounds and building of this abattoir is \$1,200,000. The operating expenses were about \$50,000 and the total receipts about \$89,000—a profit of \$39,000.

Berne, Switzerland, last summer decided to build a new municipal abattoir to cost several hundred thousand dollars, advertising for bids. This shows what faith the people of that city have in such an enterprise.

Passing eastward, we find ourselves placed in an even more ridiculous predicament, when we learn of the municipal abattoir at Shanghai, China, with its concrete floors and brick walls, and which is kept scrupulously clean at all times. The cost of slaughtering here is: Ox, eighty-five (85) cents; sheep, ten (10) cents; calf, twenty-five (25) cents, and pig, twenty (20) cents, with an additional charge from five to twenty cents if killed outside of regular hours.

Jumping from China to South America, we find Uruguay proposes passing a law authorizing the issuing of bonds to build and operate a State abattoir. Working homeward, we next hear that the health officials of Toronto, Canada, are agitating the erection of a municipal abattoir, so that the slaughtering may be centralized. The Board of Health of Berlin, Ontario, Canada, has taken steps to have erected a public abattoir and to require all meats to be inspected. If time would permit, I might cite many more cities in other countries that have adopted this plan as the only feasible solution for handling this important question.

I am delighted to be able to say here to-day that a few of

what certainly must be regarded as more progressive towns and cities of our own country have come to realize that to continue to permit the slaughter of animals under unfavorable conditions, such as is being done in many places in every State in the Union, is to sanction a system that is considered obsolete in most foreign countries, and at the same time gives encouragement to methods which jeopardize the health of a large portion of our people.

The first town in the United States of which we have knowledge of having provided a municipal slaughter house is Paris, Tex., in 1909. The plant cost about \$10,000 and was met by issuing bonds. It is the purpose of the officials to run the plant without a profit. The charges for slaughtering are as follows: Cattle, \$1.25 each; hogs, sheep and calves, 75 cents; the livestock owner receiving the hide, liver, head, caul, tail and brain. The offal, blood, etc., goes to the city. The charge includes refrigeration for a period of five days, and delivery is made to the local shops free of charge. In case the carcass remains over five days, a charge of 10 cents is made for each additional day. The inspector (veterinarian) receives \$1,200 a year salary.

I had hoped to be able to give you an up-to-date statement showing the financial side of this proposition, as well as that of those I am about to refer to, but on account of conditions arising over which I had no control I was unable to write for some time to include them in this paper.

The first six months of operation, however, showed receipts to average \$701 per month, with the average monthly expenses of \$562, giving an average profit per month of \$139. We understand that since then the receipts pay the running expenses of the plant, the interest on the bonds, and also provide a sinking fund to meet the bonds when they mature.

Beaumont, another up-to-date town in the same State, according to recent advices, has taken steps to supply a public abattoir. Still another southwestern city that has led the way in municipal progress along this line is Little Rock, Ark. Here an arrangement has been made with the owners, we understand, of two establishments, one located on the west end of the city, the other

on the east side, for the slaughter of all animals and preparation of meats sold within the city, Federal-inspected meat excepted.

In addition to the cities named, the officials of the following places have taken steps to supply municipal abattoir facilities, building and owning the plant or arranging with private owners for the use of the plant in every instance; hence the animals must be slaughtered under municipal inspection: Demopolis and Birmingham, Ala.; Knoxville and Nashville (\$75,000), Tenn.; Louisville, Ky.; Charlestown (\$10,000) and Columbia (\$40,000), S. C.; New Orleans, La.; Bridgeport, Conn., and Buffalo, N. Y.

There may be other towns which have made similar provisions; the above, however, comprises all places of which we have knowledge at this time. While we regret exceedingly that the name of a Pennsylvania town is not on the roll of honor, yet we need not be entirely ashamed or disheartened, for the reason that a number of our municipalities have established a system of meat inspection, some of which are exceptionally good.

During the past year the Borough of Bristol has adopted an ordinance which requires all meats sold within the borough to be inspected and stamped by either a Federal, State or local inspector. This ordinance comes nearer than any other in the State, of which we have knowledge, to the municipal abattoir requirements. (We have reason to feel that the time is not far distant when we shall see in this enterprising town a public abattoir, and one of which we will all be proud.) Recent unofficial advices indicate that Philadelphia, the metropolis of our great State, will before long be supplied with public abattoirs, at which all slaughtering will be done under inspection.

Meat inspection in Pennsylvania, especially municipal inspection, has been, as you all know, going on for some years, yet it is but in its infancy. We are just beginning to become awakened to its possibilities, and those who have given the subject attention realize that the next few years are bound to bring marked improvement, especially with reference to facilities for carrying on municipal inspection.

The municipal owned or controlled slaughter house has come to stay. It has been proven a success, when viewed from all sides interested. It has been demonstrated that by assembling all animals to be slaughtered at a central point, or in the case of a large city, several convenient points, where adequate facilities are provided that the slaughtering can be done and the necessary refrigeration furnished with less expense to the butcher than were each butcher to undertake to furnish his own facilities. In addition to being a convenience and financial saving to the butchers, the public abattoir, from a sanitary point of view, is a success as much as it is a necessity, to say nothing of the enterprise being a safe municipal business proposition.

Public sentiment must be aroused and the people made to understand this important question, especially the officials of our local municipalities, and the many economic and hygienic advantages of such a system for handling local inspection pointed out, so that the more safe and up-to-date methods may be installed. This done, it will be but a surprisingly short time until many of our Pennsylvania towns will have a place on the roll of honor.

DR. W. G. CLARK, Marinette, Wis., says: "The REVIEW gets better with every number. Can't afford to miss a number; have a complete bound file from 1891. With best wishes, etc."

YOUNG AND UP-TO-DATE AFTER FORTY YEARS IN PRACTICE
Dr. D. D. Keller, the veteran practitioner of veterinary medicine, Salem, Ore., wrote when renewing his subscription to the REVIEW: "Please continue my subscription to the AMERICAN VETERINARY REVIEW for another year. Many new publications, and quite worthy ones too, coming out, but none of them nearly reaches the AMERICAN VETERINARY REVIEW. How any veterinarian can hope to keep anywhere nearly abreast of the times and not read the REVIEW I cannot figure out. I have followed my profession for nearly forty years and expect to continue it as long as I live; and as long as I am permitted to practice, I want to know all the new and best things and put them into practice; for although I am old in body, I may be young and up-to-date in mind."

OOPHORECTOMY IN THE BITCH.*

H. E. KINGMAN, B.S., M.D.V., D.V.S., PROFESSOR OF SURGERY, DIVISION OF VETERINARY MEDICINE, COLORADO STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLO.

Every surgeon has his own methods and technique, and as he operates will change in detail from one way to another as he finds opportunities to make his work more simple, rapid or efficient.

It is the object of this paper to bring out one or two steps in this operation that are not commonly mentioned in our literature.

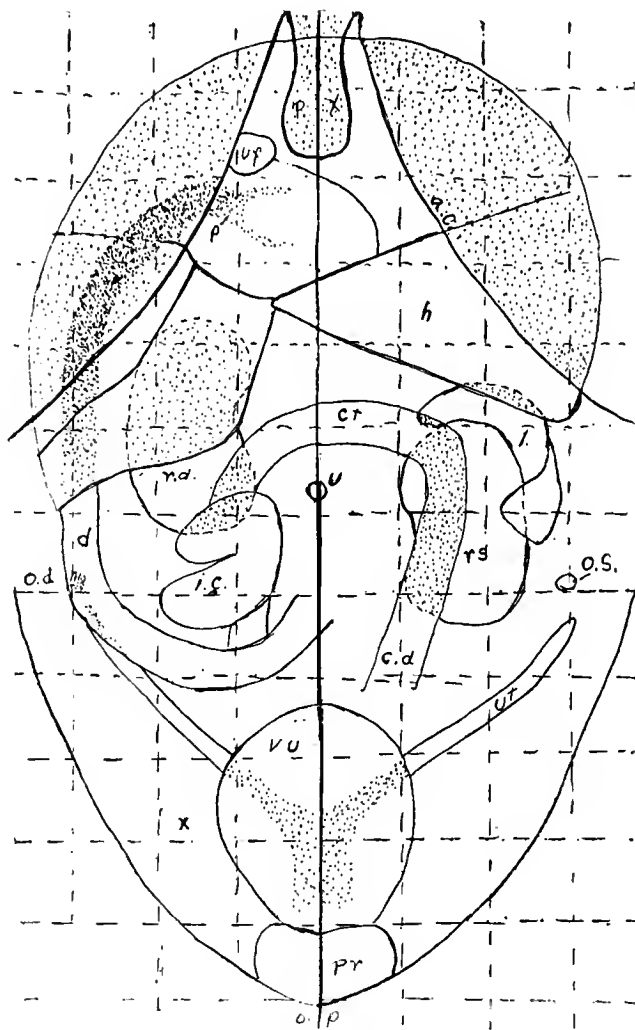
Preparation of the Patient.—When the bitch enters the hospital she is placed upon the table and the seat of operation washed with green soap and water, the hair shaved and a pack saturated in a 1/1,000 solution of bichloride is held in place by a many-tailed bandage. She is then placed in her cage until the next day.

An hour and a half before the operation she is given two tablets of H. M. C. No. 1 (Abbot's). Each contains $\frac{1}{4}$ gr. of morphine, 1/1,000 gr. of hyoscine and 1/67 gr. of cactin.

She is then allowed to vomit and micturate. If the latter does not take place it is advisable to pass a catheter, since the bladder when distended lies in the same region as the ovaries and horns of the uterus, but when empty it occupies a very small space back toward the pelvis and well out of the way. Half an hour before the operation one or two more tablets of H. M. C., depending upon the size of the bitch, should be administered. If necessary, ether may be used to complete the anesthesia. This method is practical and easily carried out. It must not be conveyed, however, that all should adhere to some such method under all circumstances. Sometimes a man will bring an animal to the hospital and wish to take her away as soon as possible; perhaps he

* Presented at the Meeting of the Colorado State Veterinary Medical Association, Denver, Colo., January 18, 1912.

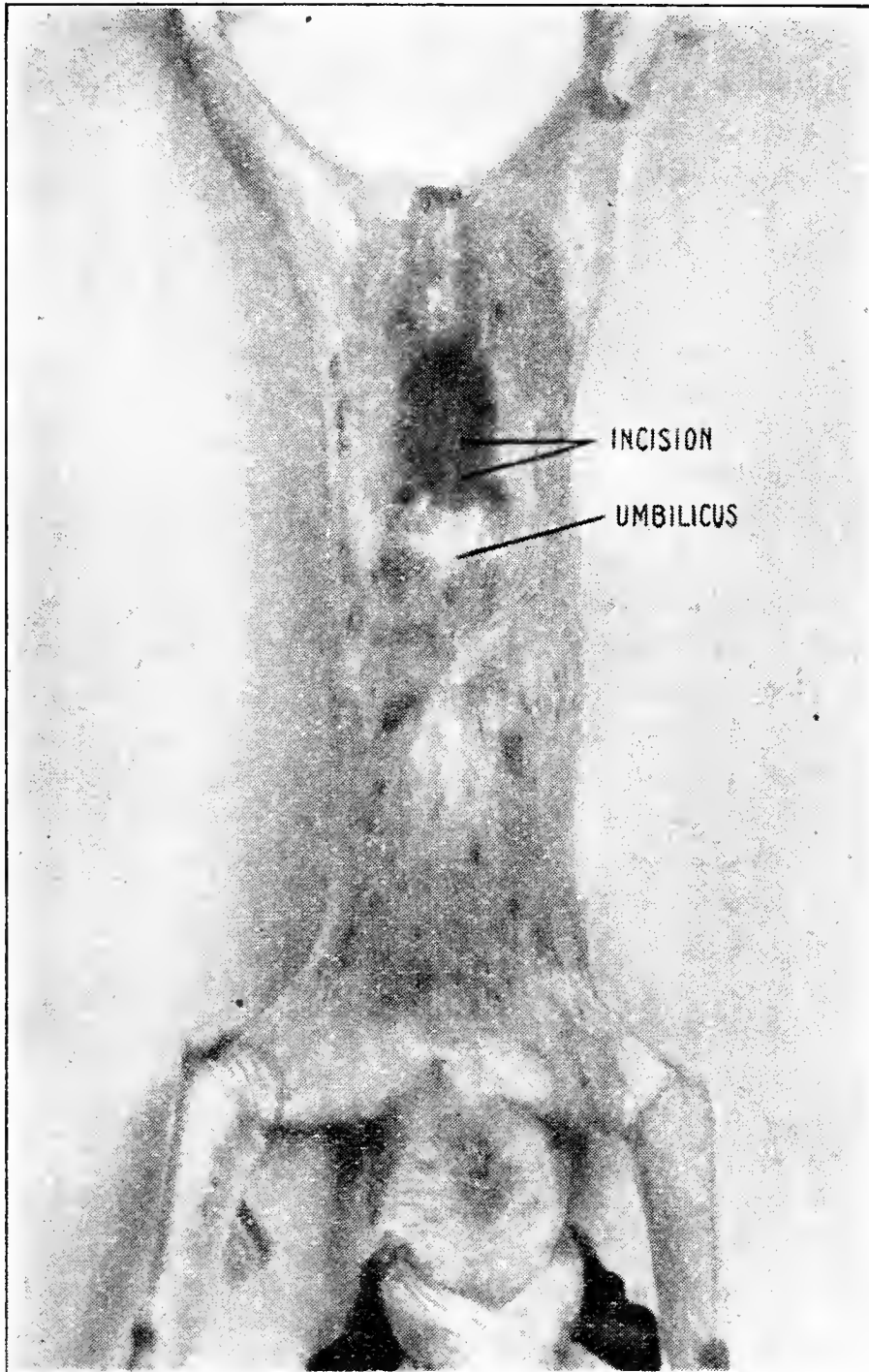
has driven a long way and cannot make an extra trip for the bitch. In such a case ether may be used as an anesthetic, or one large dose of H. M. C. (4 to 5 tablets of No. 1) may be given, and the operation performed at once, and the animal dismissed. But, if possible, even more care than is here outlined should be practiced.



Preparation of the Field.—The bitch should now be ready for the table. It is taken for granted that the field has already been partially prepared. All that is necessary now is to remove the bichloride pack and paint the field with a 1 per cent. solution of iodine in gasoline or a 5 per cent. tincture of iodine. A very convenient and effective method of keeping the field and operator's hands from contamination is to place a small sheet of muslin, that has been boiled with the instruments, over the bitch and tie it to the side of the table; a small hole is then cut over the proposed incision. This also protects the horn from infection, which may be carried back into the abdomen. While this routine

seems tedious, in practice it is not; the time consumed is infinitesimal and the protection is well worth the trouble.

The operator's hands should be scrubbed with hot water and green soap and dried on a sterile towel. Rubber gloves may be



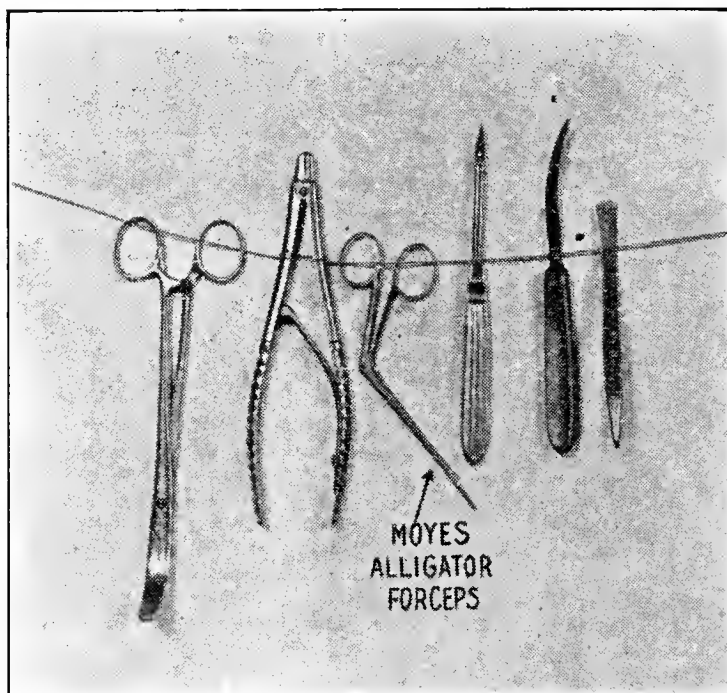
worn—in fact, mark the surgeon who takes a pride in his work. Further time will not be taken here for the preparation of the operators' hands, but the reader is referred to an article in the *AMERICAN VETERINARY REVIEW*, August, 1911, by Dr. Stowder.

Topographical Anatomy.—The surgical landmarks are the umbilical scar and the median line. The tissues encountered are

the skin, linea alba, recti muscles and peritoneum. There is a small cutaneous vein, but no arteries. The omentum covers part of the viscera in this region, and may be bothersome in fat animals. The ovaries are attached to the sublumbar region on either side of the median line and about 25 millimeters posterior to a plane passed through the umbilicus. The diagram made by Dr. O. Charnock Bradley gives at a glance the topography of the region.

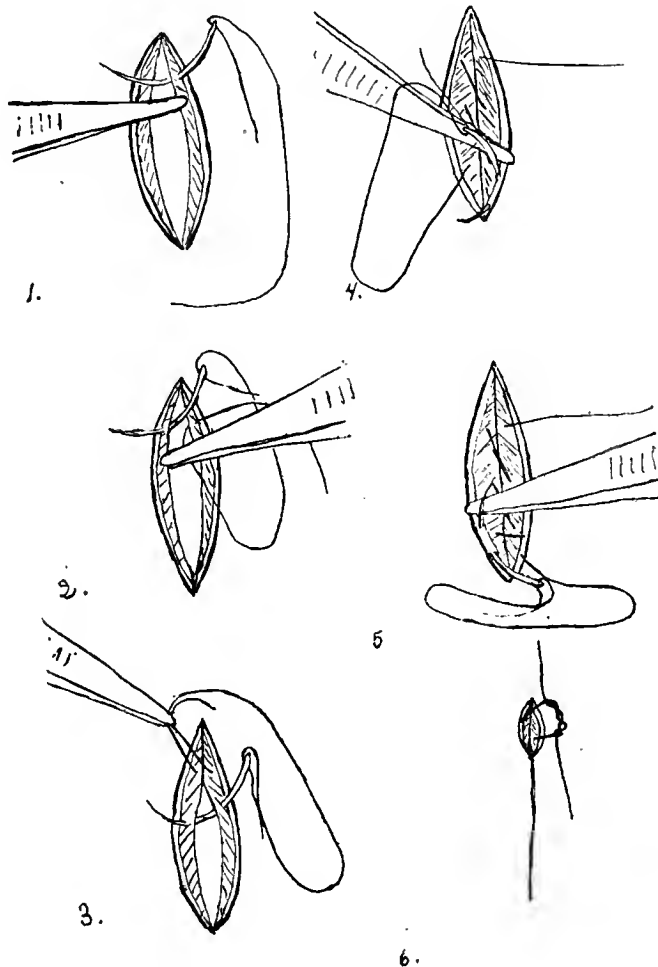
The Incision.—The incision is made on the median line, and should be about 2 centimeters in length, the anterior commissure being from 3 to 4 centimeters posterior to the umbilicus. The skin is incised with a sharp-pointed bistoury, then a probe-pointed bistoury that has been ground so that the cutting edge extends to the point of the bistoury, as shown in the cut, is pushed through the muscle and peritoneum at the posterior commissure and carried anteriorly as far as the skin incision.

Securing the Horn of the Uterus.—A Moyes alligator forceps is then passed through the incision and carried close to the



abdominal wall toward the operator's left until the sublumbar region is reached, the forceps are opened and the horn of the uterus grasped and pulled through the incision. It takes some practice before the operator can tell by the tension whether or

not he has engaged the cornua. In fat animals the forceps may grasp the broad ligament, which may be followed to the horn. It is an easy matter now to draw the left ovary through the opening and ablate it, first applying compression forceps. The forequarters should now be lifted so as to flex the body ventrally and the horn followed posteriorly until the body of the uterus is met, when the other cornua may be grasped. The right ovary may be



treated in the same manner as the left, and both horns ligated and severed at any place convenient to the operator.

Suturing the Wound.—No. 1 catgut on a small, full-curved needle is used. The method is known as a continuous mattress suture, and is applied as shown by the following illustrations: The thumb forceps lifting the peritoneum on the right side away from the viscera, and the needle is passed through the muscle and peritoneum, Fig. 1; the peritoneum of the left side is then lifted and the needle passed through the peritoneum and muscle from beneath, Fig. 2; the suture is then grasped with the fingers or forceps, as in Fig. 3, drawing the peritoneal surfaces together

and lifting them so that the needle may pass through both at the same time. This is repeated until the peritoneal wound is closed by a simple continuous suture. The skin is then grasped and held, as in Fig. 4, while a subcutaneous suture is placed in it. This suture is then carried continuously from one side to the other until the skin wound is closed. The two ends of the suture are united by a surgeon's knot, as in Fig. 6. If No. 1 gut is used, the knot should be small enough to be completely hidden.

After-treatment.—An aseptic pack of gauze, with or without a boric acid dressing, should be held over the wound by a many-tailed bandage. The bitch will lie quietly for the rest of the day and be as bright as ever the next morning. Union by first intention will result, and the gut suture is readily absorbed, so that there is not the bother of removing it, as with silk or linen.

PRESIDENT BRENTON of the American Veterinary Medical Association exercised his usual good judgment in his appointment of Professor Septimus Sisson, anatomist at the College of Veterinary Medicine of the Ohio State University, as chairman of the committee on revision of anatomical nomenclature. The revision is much to be desired, as the present condition in regard to our anatomical terminology is almost chaotic. The undertaking will be difficult and laborious, and must be done with great care in order to produce a nomenclature which merits general acceptance. Professor Sisson has demonstrated his unusual ability and perseverance in the production of *Sisson's Veterinary Anatomy*, which has met with universal approval, and acceptance at veterinary schools, and he expects to further broaden his knowledge on the subject by consulting with his British colleagues during a sojourn in Europe the coming summer. We congratulate the A. V. M. A. on Dr. Brenton's appointment.

DR. D. A. GORMAN, of Kittanning, Pa., in renewing his subscription to the REVIEW says of it: "One of the living issues of our profession—long may it live."

CORNEAL ULCERATION.

BY G. J. COLLINS, D.V.S., ASS'T STATE VETERINARIAN, WEST POINT, NEB.

An infiltration, followed by suppuration and loss of substance of the cornea. Is of common occurrence.

Etiology.—Infection (streptococci, staphylococci pneumococci), debilitating diseases, chronic conjunctivitis, secretion of dacryocystitis. (1) I find traumatism the usual causative factor, oat, wheat and rye hulls; injury by baling wire in hay, by barbs on fence, nails in stalls or manger, coarse straw, weeds, etc. Some by being struck in the eye with whip, halter rope, etc. Also foreign bodies are quite often found. (2) Trachoma, trichiasis. (3) Defective nutrition of the cornea, glaucoma, paralysis of trigeminus, marasmus. (4) Infection, subsequent to operations. (5) Phlyctenular keratitis. (6) Infectious conjunctivitis of herbivora. (7) Toxins. (8) Canine distemper in dogs. (9) Variola.

Clinical Forms.—The nomenclature of ulcers on the cornea is quite extensive and is founded upon peculiarities and symptoms.

(1) Simple ulcer, small, superficial, slight or severe irritation without a tendency to perforation.

(2) Deep ulcer, extends to deeper layers and has a tendency to perforation, with marked symptoms of iritis and hypopyon.

There are many other forms, but not any more important from a therapeutical or surgical view than the former; suffice to name them: *Rodent, serpent, marginal ring, transparent, dendriform, herpetic, abscessal* and *catarrhal ulcers*.

Symptoms.—The diagnosis of corneal ulceration, of course, is arrived at by the objective symptoms. The subjective symp-

toms are pain and photophobia. Lacrymation and blepharospasm is what usually attracts the attention of the owner or attendant, and the animal is brought to the veterinarian for inspection and treatment. Constant closure of the eyelids, associated with partial opacity of cornea and myosis, is strongly indicative of acute corneal ulceration, provided there is no evidence of a corneal puncture, with infection of cornea or aqueous humor.

The ulcer begins with a grayish or grayish-yellow infiltration of a circumscribed portion of the cornea. This is later accompanied by suppuration, and the superficial layers are cast off, and this is the beginning of the ulcer. Pathologists call it a molecular disintegration; anyhow, it is a loss of substance. Sometimes the ulceration is rapid and other times the process is prolonged (chronic). It may extend in area or depth, or both. May advance in one direction, or in two or three directions, or all around the circumference. Sometimes heals on one side and advances on the other (serpiginous ulcer). There is almost invariably a more or less grayish infiltration of the cornea immediately surrounding the ulcer, with constant ciliary injection.

If the ulcer is superficial, the diseased or destroyed portion will be cast off in a few days, the infiltrated border will commence to clear, and repair set in. This is accompanied by the appearance of capillaries or blood vessels, which arise or come from the limbus.

The ulcerative process terminates in cicatrization. If there is difficulty in the determination of an ulcer or ulcers, instill a few drops of a two per cent. solution of fluorescein, which stains the ulcer or ulcers and infiltrated area green.

Deep ulcers have more pronounced symptoms and the complications and sequela more serious. There may be, and there usually is, more or less conjunctivitis, iritis and hypopyon.

Hypopyon is a collection of pus in anterior chamber, usually seen at bottom of anterior chamber, and is not derived from ulcer, but is an exudation derived from the iritis or iridocyclitis; in other words, a coagulated exudate. It may partially or completely fill the anterior chamber and remain fluid or semi-

solid. Quite often all there can be seen is a corneal opacity and the ulcer, or ulcers are not detected unless a solution of fluorescein or some other coloring agent be employed. A superficial ulcer usually leaves no permanent cicatrix; deep ulcers leave permanent cicatrices.

Perforation of the cornea, with infection of aqueous humor and iris, is quite common and very serious, and requires prompt surgical or therapeutical treatment.

Perforation may be spontaneous, or it may be preceded by the protrusion of Descemet's membrane through the ulcer simulating a small vesicle. Sometimes the iris protrudes; is carried by the aqueous humor during its escape. Eye feels soft and the cornea wrinkled; in other words, anterior chamber collapses. There is obliteration of the anterior chamber, with apposition of the cornea, iris and capsule of crystalline lens.

After cicatrization of the ulcer, the iris may regain its normal position. But frequently the prolapsed iris adheres to the corneal cicatrix, and this constitutes anterior synechia. The adhesion of the iris may be partial and the pupil misshaped on account of it, or it may be complete, especially at margin of pupil, causing exclusion and occlusion of the pupil.

Dislocation of the lens at the time of perforation is quite common. It happens most frequently, I believe, in enzootic conjunctivitis of cattle, or, at least, this has been my experience. Sometimes quite a number in a small herd will lose their vision in this way. The lens is dislocated antero-inferiorly in aqueous chamber; in fact, it quite often protrudes through the perforation. Frequently, after cicatrization of the perforation and the anterior chamber has been re-established, the lens recedes and regains its normal position. However, there is often a proliferation of the subcapsular epithelium, which has become irritated by the pressure of the lens upon the cornea, forming a white spot upon its anterior surface, known as anterior capsular cataract.

Iridocyclitis and panophthalmitis are serious complications that often follow perforation, especially if the suppurative process be a virulent one. Occasionally, but not often, a corneal

fistula will remain after perforation, which exposes the eye to subsequent serious inflammation.

Treatment.—(1) Treatment of pre-existing local conditions, (2) local treatment of the ulcerative process, (3) constitutional.

Treatment of pre-existing local conditions consists in removing foreign bodies, if there be any, and relieving other local irritating conditions. Suppurative dacryocystitis or conjunctivitis must receive attention prior to treatment of the ulcerous process.

Local treatment consists of antiseptic lotions—cocaine, atropine and eserine solutions; cauterization, curetting, paracentesis of cornea and division of ulcer; hot and cold compresses.

Antisepsis.—Antiseptic solutions, such as sodium chloride, boric acid, corrosive sublimate, chinosol, and as good if not better than any of the above, germicidal discs. Iodoform, sprinkled upon the cornea, is good. Some practitioners use the ointment, but I don't like ointments for acute diseases of the eye. Others inject solutions of corrosive sublimate, argyrol or protargol, formalin and sodium chloride subconjunctivally. This I never tried.

To prevent spreading, either the curette or actual cautery may be employed. But we like chemical or medicinal cauterization better—a stick of silver nitrate or cupric sulphate, tincture of iodine or phenol—applied by means of a swab or cotton. We cauterize every other day until healing is manifested. Along with this treatment antiseptic and astringent solutions are used. The antiseptic or astringent lotion used depending on which caustic is employed in cauterization.

Paracentesis of the cornea is valuable when the intraocular pressure is excessive or the aqueous humor infected. This should be done with a paracentesis trocar, but a keratome or Graefe cataract knife will do.

The animal should be well secured before attempting this operation, or serious injury to eye may result. Casting or the stanchion will suffice, but the operating table is far superior.

Either local or general anæsthesia may be employed. We give two or three ounces of chloral hydrate, depending on size;

apply a ten per cent. solution of cocaine locally and wait until the patient is semi-stupid, then put on the table and secure.

A 1/1,000 corrosive sublimate cotton compress should be put over the eye and immediate surrounding integument a few hours before operation.

After thorough disinfection of the conjunctival sac and cauterization of ulcer or ulcers, the conjunctiva just below and a little to the left of the lower margin of the cornea is grasped with the fixation forceps, to hold the eyeball in position; the paracentesis trocar is passed perpendicularly through the cornea near the limbus at the lower margin, unless the situation of the ulcer requires another site. As soon as its point reaches the anterior chamber the handle is depressed and the trocar or knife is pushed in horizontally, avoiding wounding the iris or lens, until the incision is fully 3 to 6 mm. long. The instrument should be withdrawn slowly and pressure should be applied upon cornea, so as to evacuate the contents of the aqueous chamber gradually.

Frequently, when the infection seems very virulent, the corneal incision will have to be opened daily until the ulcer heals. We have in a few cases irrigated the aqueous chamber with a normal saline solution and others with 1/5,000 corrosive sublimate or germicidal disc solution. This isn't necessary, only in the virulent cases.

Iodoform can now be dusted in the eye and a protective dressing applied. Atropine, sometimes eserine, must be used as indicated by position of iris and location of ulcer. Atropine relieves the irritation. After the operation we usually instill a solution of atropine and apply a cotton compress soaked in a 1/1,000 corrosive sublimate solution.

The subsequent treatment consists of the installation of anti-septic astringent lotion—atropine or eserine, as indicated—and a protective dressing or compress until the eye has completely healed. After the healing process is well established, ointment of the yellow oxide of mercury is used to hasten cicatrization and to clear up the cornea.

Division or incision of the ulcer is obsolete.

Constitutional treatment should be employed when the ulceration is due to an infective or constitutional disease or when the general condition is below par. In the latter tonics are indicated, and in the former medicines that are commonly used in such diseases.

"I CAN'T afford to miss a single issue."—(*W. D. Bennett*, Ovid, N. Y.)

Dr. C. H. CASE, Akron, Ohio, says: "The most for the least money is all I have to say."

Dr. HARRY W. STEDMAN, Meeker, Colo., says: I am gladly sending you my check for the REVIEW for the coming year. I could not, and would not, think of getting along without your valuable periodical.

Two hundred veterinarians and over four hundred visitors and students were in attendance at the Kansas City Meeting of the Missouri Valley Veterinary Medical Association, January 30 to February 2, inclusive, and Secretary Simpson's account of it on page 115 of this issue records an immense amount of work accomplished.

At the recent meeting of the Ohio State Veterinary Medical Association Prof. Louis P. Cook, of the Cincinnati Veterinary College, demonstrated the technique for "*Intraspinal Injections*" in the horse, and suggested the administration of tetanus antitoxin in this way, for the cure of severe tetanus cases. Most remarkable results have been obtained by Dr. Cook from very small doses of the antitoxin administered in this way in a few tetanus cases that appeared absolutely hopeless.

THE following from the New York *Tribune* would seem to speak highly of the food-stuffs used to put on the flesh, although the Montana air may be responsible in large measure for the frame: "Billings, Mont., March 12—What is claimed to be the largest range steer ever sent to market has been shipped to Chicago from here. The animal weighs more than 2,500 pounds and brought \$200, which is said to be a record price for a range steer. The animal was fattened on alfalfa, sugar beet pulp and syrup."

THE CAUSE AND THE RELIEF OF THE DYSPNOEA RESULTING FROM LARYNGEAL HEMIPLEGIA IN THE HORSE (ROARING).*

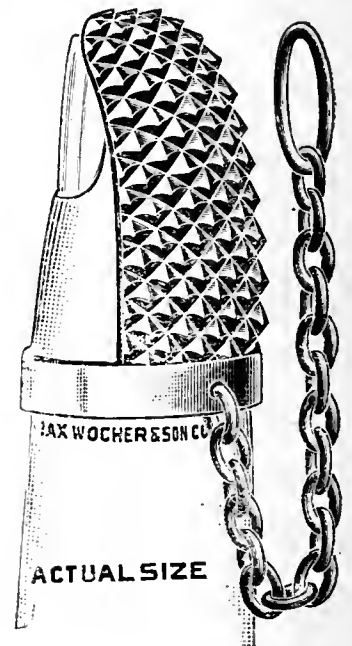
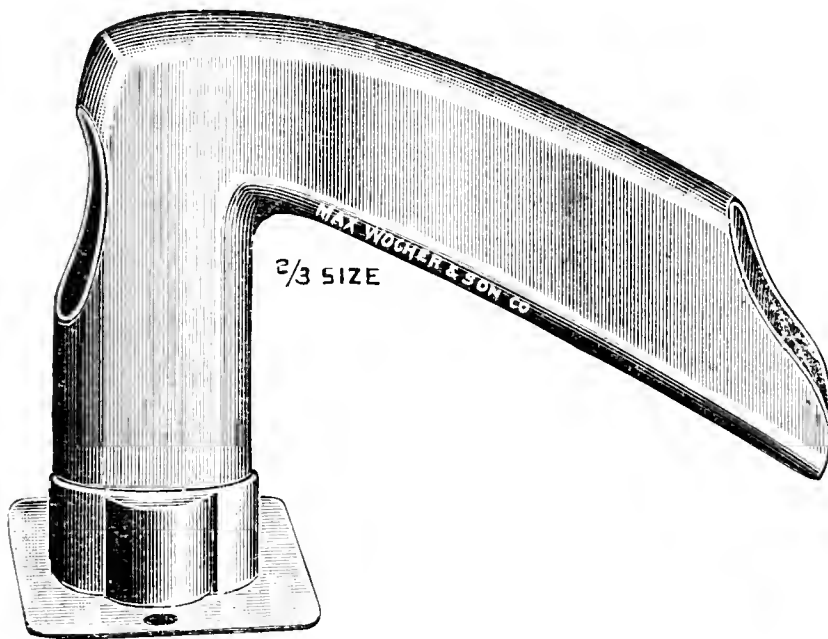
BY LOUIS P. COOK, D.V.S., CINCINNATI VETERINARY COLLEGE.

External to each vocal cord there is in the larynx a lateral ventricle. In the horse this air sack, when distended, is large enough to accommodate the egg of a bantam hen. It is lined by a very thin mucous membrane. Functionally, the sack is related to the production and regulation of the voice. It is dilated by certain laryngeal muscles and contracted by others, all of which are attached to and move the arytenoid cartilage. In the normal larynx, with all the muscles performing their functions, the ventricle does not remain dilated during the respiratory movements.

Now in the "roarer" there is a paralysis of certain of the laryngeal muscles, which, under normal conditions, force the air out of the ventricle of the left side of the larynx, this paralysis resulting from some pathological condition of the motor nerve of such muscles, namely, the left recurrent laryngeal. Whenever an animal so affected is put to any exertion and caused to breathe deeply, the ventricle of the affected side fills with air and balloons, and remains so for a time, in consequence of the paralyzed muscles being unable to force the air out. This ballooning of the lateral ventricle closes, or almost closes, the narrow glottis, dyspnoea or even asphyxiation resulting. If an animal in such respiratory distress is allowed to rest, the dyspnoea soon subsides. *The dyspnoea in the "roarer," then, is due solely to the distension of the left lateral ventricle, a condition that is possible only*

* Read before the Ohio State Veterinary Medical Association January 18, 1912. Following the reading of the paper the operation described was performed by the writer.

when certain laryngeal muscles are paralyzed. Now to effect a cure for this condition it is only necessary to obliterate the ventricle of the affected side, and to do this we have only to remove the thin mucous lining. When this is done the denuded walls of the ventricle soon grow together. The remedy for this common



disease of the horse is, therefore, simple, and its application is also simple. The removal of the mucous lining can be done easily, as follows:

Inject a dram or so of an aqueous solution containing about 1 in 4,000 of adrenalin and 4 per cent. cocaine under the skin directly over the triangular space between the cricoid and thyroid cartilages. The cartilaginous borders of this space can be distinctly felt through the skin and thin muscular tissue. When local anesthesia is obtained make a longitudinal incision about 2 inches long in the median line through the skin. Then cut through the crico-thyroid membrane from the body of the thyroid cartilage anteriorly to the cricoid cartilage posteriorly. This will permit the index finger to be passed into the larynx and into the ventricle of the affected left side. With the finger of one hand in the ventricle, pass a long and slightly curved nozzle of a small syringe along the finger in the ventricle, which will guide it, and inject about a dram of the same cocaine-adrenalin solution into

the ventricle. This will in a few minutes produce both anesthesia and anemia in the walls of the ventricle. Next place upon the index finger the "thimble curette" and pass it into the ventricle, and by a little gentle scraping lacerate and destroy the thin mucous membrane lining. It is entirely unnecessary to be rough here, but, of course, the mucous lining must be thoroughly scraped. This curetting ends the operation. As after-treatment, little is necessary, but antiseptic attention will, of course, facilitate healing. In some cases an œdema of the glottis develops, and all patients must, therefore, be seen every few hours for the first three or four days. Upon the appearance of dyspnoea a laryngeal breathing tube should be inserted through the crico-thyroid incision. This tube is not needed in every case, and it should only be used when dyspnoea exists. But to be on the safe side, the tube should be kept in during the first three or four nights.

Now this operation can be performed by any veterinarian. It is one of the simplest operations in veterinary surgery. Of course, the merest novice in surgery can cut through the skin and crico-thyroid membrane, and anyone can then introduce the finger



and pass it into the lateral ventricle. This is as simple as passing the finger into one's vest pocket. Nor is any skill required to curette the mucous lining of the ventricle.

It is not necessary to cast the patient in performing this operation; in fact, it can be done easier with the patient on its feet. No assistants are needed. A check-rein will hold the head up. With good cocaine and adrenalin in solution, the operation can be performed painlessly and bloodlessly, and it should not take over three or four minutes to perform it.

In those rare cases where the paralysis is bilateral the mucous

membrane of both ventricles should be removed. This bilateral paralysis can be determined only by operating on the left side first. Failure to obtain full relief from the dyspnoea by this operation indicates that the muscles of the right side are also paralyzed. The second operation on the right ventricle can then be performed in about six weeks after the first operation. If this bilateral laryngeal paralysis were not so extremely rare, it would be advisable to operate on both ventricles at once. The writer has repeatedly done this, and the double operation caused no more inconvenience to the animal than the single one would, and that is practically none in most cases. Strange to say, little soreness results and the patients seldom miss a meal after the operation. They swallow food and water without apparent pain or difficulty.

In the fall of 1909 the writer first called the attention of the veterinary profession to the fact that the dyspnoea in roaring could be permanently relieved by the mere obliteration of the lateral ventricle of the affected side, and that this could be done without dividing any of the cartilages of the larynx. His method of operating at that time necessitated the casting of the patient, but he soon found that the removal of the lining of the ventricle could be more easily done with the patient on its feet. At the Cincinnati Veterinary College about 40 dissecting subjects, a number of which were "roarers," have since been operated on by the writer, and in no case did the ventricle fail to close up, a fact that was determined on post-mortem examination later. Our experience shows that it takes from two to four weeks for this to take place. All "roarers" operated on proved absolutely cured on tests made a month after operation and since.

Of course, this operation is useful only in laryngeal paralysis. It will not relieve the dyspnoea of pulmonary emphysema, etc. The operation is indicated only in uncomplicated cases of laryngeal paralysis. However, in the event of error in diagnosis, the operation can do no harm to the animal. In cases where this extremely simple operation is indicated it guarantees a positive cure within five or six weeks' time.

THERAPEUTIC NOTES.*

BY DR. K. W. STOWDER, FOR DR. H. JENSEN.

Some communities are badly infested with tetanus, and the best forms of prevention and treatment are always of interest. No one doubts the value of antitoxin as a preventive, but some seem to feel a doubt regarding its therapeutic value.

Possibly the best way to look at the matter is this: Thorough cleanliness of all parts about the wound is absolutely necessary, of course. That is, providing it can be found. Open the wound wide, because oxygen is a foe to the growth of the organism. Now take stock of the symptoms. If the animal seems able to move about and is not too stiff, get antitoxin (veterinary) and give it in large doses. Not less than 3,000 units at a time and not less than 10,000 during the first 24 hours. Then watch the animal closely and give several small doses as symptoms seem to demand, in order to keep him relaxed enough to rest and eat. If the wound is cleansed daily and some assistance given until the patient starts to make antitoxin himself, most of them will recover. Large and frequent doses of potassium and sodium bromide in the drinking water are, as a rule, valuable assistants to the control of the symptoms. To those who have not had success I would recommend the use of larger doses, given more frequently, and to watch symptoms closely in regulating the dose.

Good catharsis is valuable, so do not neglect an early use of cathartics.

The use of antitoxin intravenously has been suggested, and.

* Presented to the Semi-annual Meeting of the Missouri Valley Veterinary Medical Association.

theoretically, at least, would seem to be of some avail. Whether or not it is of additional benefit over the subcutaneous method is to me doubtful. The toxin does not necessarily reside in the blood stream, and, in fact, does not do any of its damage while here. But wherever it will meet the soonest and neutralize the quickest and to the best advantage this toxin is the important point. Let us each compare the subcutaneous method with the intravenous application and report for the benefit of all.

Another thought occurs to me while on this tetanus subject, and that is, Is a mule any easier to recover from a well-defined case of tetanus than a horse, or is the reverse true? Is there any noticeable difference as to mule or horse in the severity of symptoms or ease of affording relief?

Occasionally we are all asked to prescribe for those bowel troubles of chickens and usually find that real chicken cholera is the trouble.

Where valuable birds are at stake it is of no little importance to know that some at least can be saved or that it is safe to take birds to shows and not lose them from this chicken cholera by the use of fowl cholera vaccine. This vaccine is not expensive, especially where valuable birds are involved, and in my experience has proven quite reliable. Vaccinated birds, even eating the carcasses of those which died with the disease as controls, seemed healthy as ordinary birds, while unvaccinated ones nearly always died.

These fowl diseases may not be of much general interest, but sometimes one makes a point which later means dollars in other practice by giving assistance when the hens are dying or the valuable breeding stock arrives sick with the cholera after a visit to a poultry show.

Recently a veterinarian and a poultry man together sent me some chickens which had very sore and swollen feet and legs. They gave a history that many birds in that locality had the same trouble and that they, therefore, thought that the trouble must be contagious. After an examination, it was determined that the trouble was "bumble-foot," caused by bruising, which prob-

ably occurs when fowls must jump from high perches on hard ground. Lowering the perches stopped the trouble.

Not much has been written on the subject of alteratives in veterinary practice, and yet each of us feel the need and value highly those good alteratives with which we have come in contact. Potassium iodide is with many so widely used as an alterative that the two words are synonymous. With all due credit to potassium iodide as an alterative, especially in those specific instances with which you are all quite familiar, like actinomycosis, etc., it is not so valuable as some of the vegetable alteratives in many other instances.

One of the most valuable of the vegetable alteratives which is available to correct perverted metabolism, especially when accompanied by rise of temperature, or, in other words, we might say, as a corrective in acute conditions, is *Echinacea angustifolia*. This plant grows in central and southern United States and is obtainable in either the powder or as the fluid extract. The most convenient form is the latter, to my notion, as it is standardized and the dose easily regulated.

My earliest acquaintance with the drug was when a fellow practitioner of human medicine prescribed it in a case of typhoid fever wherein the symptoms, to him, indicated grave danger of infective peritonitis. Too many of my cases of peritonitis, acute lymphangitis and infection of serious cavities, as open joints, etc., had been tardy in response to my usual procedure, hence I decided to give echinacea a trial. Its action as an eliminant is manifest only as a diaphoretic. Appetite seems to increase, and digestion surely improves.

In cases of infected joints, infected peritoneum and acute or chronic infections of serous cavities give echinacea a trial. Give it a chance. Use it as early as your ability will permit you to see impending symptoms of peritonitis, etc., coming, and you will be pleased. It will lower temperature, increase appetite and nutrition and increase elimination. For an average-sized animal 10 to 15 c.c. three times daily for two or three days are usually sufficient, but it can be given over a longer period and no danger

result. The best way is to slowly withdraw the drug as the symptoms abate.

If an old case of "jack sore" or summer sore is presented to you or a similar case of impoverished blood comes in, try this drug as an internal treatment, as well as a moist dressing of the fluid extract to the wound. Some cases which have refused to respond to other treatment have come along nicely after a few days of such treatment in my experience.

The common poke root and poke berry of the Mississippi Valley, or, more correctly, the *Phytolacca decandra*, is looked upon by many as a deadly poison, and yet birds eat freely of the berries and men can take large doses of the decoction of the root or eat the berries and suffer nothing but its emetic effect and feel afterward a rejuvenation of body, due to its alterative effect upon the blood.

The valuable application of this drug is in cases of infective lymphangitis and infective mastitis, especially in mares and cows. In cases of septicemia and pyemia, cellulitis or of multiple abscess formation it is valuable, but not so valuable in peritonitis and infections of serous cavities. Why? Probably because it seems to have a more specific action upon the parenchymatous tissues. This is why it is so valuable in mastitis, and here is its true sphere. In acute mastitis massage into the udder large quantities of phenol and gum camphor which have been triturated together and give internally 4 to 6 c.c. of fluid extract of *phytolacca* three times daily. As a rule, response is quick and quite satisfactory, especially among cows which are heavy milkers, and these are, as a rule, the hard cases of mastitis we deal with. It is fine internal treatment in cases of cellulitis or cases of multiple abscess formation in the nature of acne.

A MOST interesting meeting of the Veterinary Association of Manitoba was held at the city of Brandon last month, as will be seen by Secretary Torrance's report of it on page 119 of this issue of the REVIEW.

CYSTIC OVARIES AND STERILITY.*

BY EDW. A. CAHILL, V.M.D., CANONSBURG, PA.

There is probably no part of veterinary medicine which is so much abused and which offers more opportunities for quackery than that of sterility. The ordinary layman probably knows less of the female genitalia than of any other part of the body. To him the whole series of changes that occur in the female, from the time of copulation to that of parturition, is a deep mystery, and one which few of our clients feel capable of penetrating or understanding. As a result of this and the frequency of sterility from a diversity of causes, there is a strong demand for remedies to overcome sterility. The result is that the market is flooded with nostrums and patent medicines to cure sterility. These vary from colored and sweetened water to canthrides. We veterinarians, of course, know well that the majority of them are absolutely worthless, yet we seldom stop to realize that we ourselves are partly to blame for this condition. This subject is given very little consideration in our older text books, and many of us had little or no instruction in it during our collegiate course. We have a tendency to fall into a rut when treating this malady to the exclusion of newer treatments. In this way we unconsciously help the cause of the charlatan and worthless patent medicine vender. If we treat sterility intelligently and with a degree of success, it will lessen this quackery, add very largely to our prestige and add many dollars to our yearly income.

In considering sterility, I do not intend to make a long review of all its phases. I assume that all present have an intimate knowledge of embryology and obstetrics from conception to delivery, including its physiology and pathology. Consequently, I

* Read before the Western Pennsylvania Veterinary Medical Association, Pittsburgh, February 15, 1912.

will not even mention most of the causes, such as malformations, diseases of the genitalia of both sexes, etc. I will consider only two conditions, occlusion of the os uteri and cystic ovaries. It is upon these two subjects that most of us are losing many opportunities.

Occlusion of the Os Uteri.—All of us who practice in a breeding district will recognize this as embracing a very large percentage of the cases which have been previously diagnosed by our client. Many of us, in a careless examination, give the same diagnosis; but do we realize that this condition practically never exists? A short résumé of our anatomy will remind us that in the cow (which comprises most of our subjects showing this condition) the mucous membranes of the os uteri are in longitudinal folds, as in other animals; in addition to these, there are three transverse folds of mucous membrane, which render the cervical canal firm and exceedingly small. The os, in addition to this, is long and tortuous, very firm and almost cartilaginous in character. During oestrus and coition the os becomes physiologically dilated; at all other times it is so firmly constricted that it is extremely difficult or even impossible to pass one's little finger through it. In normal condition one ought to be able to pass the finest metallic probe through the os; oftentimes even this is impossible, and still the semen is able to gain an entrance. In spite of this, most breeders try to get a finger or even the whole hand through the os, or even into the uterus itself, and, failing in this, the case is pronounced "closure of the womb," and they proceed to operate for a condition which in all probability does not exist. This is done in a variety of ways, varying from the bougie to the scalpel. Usually this does far more harm than good. It is seldom required; it frequently is the mode of infection and consequent complete obliteration of the os uteri. If not successful, the animal is pronounced unfit for future breeding, and, as far as breeding is concerned, is discarded.

If we would conduct our examination a little farther, we would find that the failure to breed is in most cases not due to any defect of the uterus at all, but to a cystic condition of the

ovaries. In mares this is particularly true in animals of a nervous temperament. In cattle it is seen most frequently in herds which are affected or have been previously affected with contagious abortion or follicular vaginitis. We all know that such herds contain a very large number of sterile animals, and I have found that 90 per cent. of these cases are due to cystic ovaries, and are curable. However, it is seen in isolated cases and in herds not affected with the above-named diseases, and then it is generally due to other infections.

Except for the usual history of sterility, we have very little to guide us, and diagnosis can only be made after a rectal and vaginal examination. One quite common and rather characteristic symptom is that the subject is very frequently a nymphomaniac, and oestrus is very violent.

The ovaries when palpated are generally found to be enlarged to from one to many times their usual size; oftentimes they are as large as an egg. We must be careful to distinguish from the congested or hypertrophied ovary. This is quite simple, as the cyst usually stands out quite prominently, like a large nodule.

Several methods of operating are in vogue, but I will only describe the method which I employ, and which I find preferable in many respects to any of the other methods.

The operator will do well to give his nails unusually good care before starting this operation; they should be clipped very close, to avoid injury to the mucous membrane. After thoroughly disinfecting the hands, particularly the one intended for the vagina, the entire surface of both arms is thoroughly lubricated. The left arm is then inserted into the vagina as far as the os, while the right arm is inserted into the rectum. First one ovary is grasped between the fingers of both hands and drawn as far toward the operator as possible; firm and steady pressure is then exerted on each side of the cyst until it is felt to rupture beneath the fingers. The process is then repeated on the opposite ovary, if it be cystic also. A little pain accompanies the operation, but it seldom is of any importance.

Very seldom is any after-treatment required. Occasionally

the animal shows some pain a few hours later, but this generally responds to anodynes. The chief dangers lie in drawing the ovaries too far back, thus tearing them from their attachments, and in wounding the mucous membranes of the vagina or the rectum. These can both be avoided by care.

In from four to nine days after the operation the animal will usually show signs of oestrus, regardless of the time of her last period. If served at this time, she will usually conceive.

In some chronic cases a second or third operation will be required. Our clients are generally willing to pay a good fee for this operation if successfully done; consequently it behooves all of us to perfect our technique and do the operation with such a degree of success that other treatments will become obsolete.

In addition to the above, we frequently find sterility without the cystic condition of the ovaries. We do find the ovary enlarged and hardened. In these conditions we often get excellent results from exerting gentle pressure over the ovary in the form of massage. If our patient is valuable enough to allow a course of this treatment, the massage being applied two or three times a week, the results are very gratifying.

THE Veterinary Medical Association of New York City held the best meeting this season on the evening of March 6. Dr. Eichhorn of the Pathological Division of the B. A. I. gave an excellent discourse on the Complement Fixation Method for the Diagnosis of Glanders—illustrating the same by the presence of his laboratory apparatus. The matter was then discussed by Dr. Karl H. Meyer, Director of the Laboratory of the Pennsylvania State Live Stock Sanitary Board, Philadelphia. It was a rare treat, and was not restricted to Gothamites; as Chief Veterinarian Wills of the New York State Department of Agriculture, Albany, was present, also a number of veterinarians from New Jersey and Connecticut. Dr. Cheston M. Hoskins of Philadelphia was present and made an address in behalf of the Army Veterinary Bill. An appeal in behalf of the bill was sent to the Committee on Military Affairs from the association, signed by the president and secretary.

THE COMPARATIVE VALUE OF SOME VASO-CONSTRICTORS.*

BY H. E. KINGMAN, COLORADO STATE COLLEGE.

The discussion of vaso-constrictors simmers down to a consideration of the systemic treatment of hemorrhage.

It should first be made clear that the systemic or physiological treatment of hemorrhage is only resorted to when the physical and chemical means are not available. It must also be known that while hemorrhage is being discussed the vaso-dilators are not to be neglected.

Any agent which increases blood pressure tends to keep the blood from clotting and augments hemorrhage. It is obvious, then, that in acute hemorrhage, before the patient is exhausted, blood pressure should be lowered and clot formation encouraged. But it is held that this is unphysiological, because nature makes an effort to supply the respiratory center with blood, and the approach of death is rapid as soon as the center fails to receive its supply. The disturbed breathing during or following hemorrhage is a result of starvation of the center, and dilating the arterioles sets the patient one notch toward death. So it is believed that the important drug is one which will increase the blood pressure and at the same time have a constricting action on the arterioles.

Adrenalin.—Adrenalin is a powerful heart stimulant and it specifically constricts the arterioles. Applied locally, it blanches the mucous membranes of the eye, mouth, stomach, vagina, bladder or uterus, but it is slowly absorbed and its systemic effect takes place tardily.

* Read before the Semi-annual Meeting of the Missouri Valley Veterinary Medical Association.

However, in studying hemorrhage from the kidneys, it has been found that the intravenous injection of adrenalin materially checks the escape of blood; also that when the effect of the adrenalin wears off the hemorrhage returns. But following slow intravenous or deep intramuscular injections the arrest becomes permanent. The dose for a horse intravenously is from 1 to 5 ounces of a 1,000 to 10,000 solution, and 1 to 6 drams for a dog, repeated once every two hours.

Ergot.—Ergot is of especial value in the treatment of hemorrhage following parturition. Its results are obtained not so much from the constriction of the bloodvessels of that region as from the contraction of the muscle fibers of the uterus itself. These small fibers act mechanically as bands around the bleeding vessels.

Ergot may be given by the mouth, subcutaneously, or intramuscularly. Usually ergotin is employed for hypodermic use, but the fluid extract may be used. Dr. Winslow recommends the following preparation:

Ergotin	}	aa.....	grs. 40
Alcohol			
Glycerine	}	aa.....	drs. 1
Water			

Give one-half subcutaneously to a horse; 10-15 m. to dogs. It should be repeated frequently and made deeply into muscular tissue, to avoid abscess formation.

Pituitrin.—The *Therapeutic Gazette* gives the following article on pituitrin. It is believed that the intra-muscular injection of pituitrin has proved superior to ergotin, with reference to the intensity of contraction and continuance of excitation. The authors were enabled to note the effect of pituitrin particularly in six cases of extra-peritoneal Cæsarian section: "After not more than five minutes one could see how the exposed uterus contracted, in response to a light tactile irritation, to a firm ball. The action continued for a long time, which accounts for the fact that there was no hemorrhage, a complication that is always feared

in connection with Cæsarian section." In accordance with their observations, the authors are of the opinion that there is no doubt concerning the specific action of pituitrin upon the excitation of the uterus. Pituitrin is preferable to adrenalin because it does not increase the blood pressure as much. It is, therefore, an agent which increases the contractility of the uterus and represents an excellent remedy for post-partum hemorrhage. The fact that the site of injection is not painful nor becomes infiltrated, as is sometimes the case after the injection of ergotin, is another great advantage.

Dose for a horse is 15 to 30 cubic centimeters; dogs, 1 to 2 cubic centimeters.

Cotton Root Bark.—Cotton root bark may be used in the place of ergot, having very nearly the same action, but is said to be more oxytoxic. The dose of the fluid extract is the same as for ergot, one-half to one ounce for a mare and one dram for bitches.

As a matter of fact, the treatment of hemorrhage must vary; first, with the condition of the patient; second, with the length of time during which the hemorrhage has existed, and, third, with the source from which the hemorrhage arises. While it is doubtless true that after a large quantity of blood is lost the body endeavors to keep the respiratory centre supplied with blood, it is also true that in the early stages of severe hemorrhage the rapid fall of blood pressure, with its accompanying syncope, may be considered an effort of nature to diminish pressure upon the bleeding point, in order that the flow may be less rapid and that opportunity may exist for the formation of a clot. After this primary effect there is an effort to raise blood pressure to supply the centers at the base of the brain, and the clot is relied upon to prevent further hemorrhage. It should, therefore, seem probable that in the early stages of a very free hemorrhage the use of vaso-dilators, like amyl nitrite or nitroglycerin might be advantageously used, whereas, after the patient has become considerably exsanguinated, their use is contraindicated. Certainly, their employment after hemorrhage had stopped, would be unwise.

If the hemorrhage be from the non-striated muscular tissue, especially the uterus, it is probable that ergot or its synergists would be indicated, since the escape of blood from these parts is controlled not so much by the constriction of the vessels as by a contraction of the muscular fibers around the vessels.

Given a case of gradual exsanguination due to the slow escape of blood from striated muscular tissue, it is probable that the intramuscular or intravenous injection of adrenalin is indicated. On the contrary, if the case be acute and of recent occurrence, nitro-glycerin has proved to be better treatment.

FROM Dr. Willis Wilson, away up in Dayton, Wash.: "I herein inclose \$3 for renewal of my subscription for another year to the *best friend* the veterinary profession has. The REVIEW is largely responsible for the practitioners having any money at all, so in parting with this \$3 I feel that it will return many fold. With best wishes for the good work being done, I am, etc."

ALUMNI DINNER OF NEW YORK-AMERICAN VETERINARY COLLEGE.—The annual alumni dinner of the above veterinary school will be held at Reisenwebers, Fifty-eighth Street and the Circle (Eighth Avenue), on Tuesday evening, April 30, at 7:30 p. m. The secretary will announce a meeting of the alumnae by letter, but in order that members may be afforded an opportunity of arranging their affairs so as to be able to make their yearly pilgrimage to their alma mater, and meet their old friends of college days at the festive board, this advance notice is published.

ANNUAL WORK HORSE PARADE.—The horse has not been superseded by the motor car, according to a statement issued by the New York Women's League for Animals in announcing their sixth annual work horse parade, set for May 30. It says there are 72,000 horses in New York, and below Fourteenth Street the traffic is made up almost entirely of horse drawn vehicles. Mrs. James Speyer, president of the league, says already there have been received a number of entries for the parade, which has for its object the bettering of the conditions of the draft animals. Prizes are offered for the best conditioned horses and for the most humane drivers.—(*New York Daily Tribune.*)

REVIEW FROM JANUARY NUMBER ANNALS OF SURGERY.

BY B. F. KAUPP, M.S., D.V.S., COLORADO AGRICULTURAL COLLEGE.

Drs. Ross and Stewart, after giving a review of the literature and a record of 145 cases of sprain-fracture in the human, give a series of 15 experimental cases in a dog.

These dogs were all completely anesthetized, and after manipulation, which resulted in the experimental lesion, were destroyed by gas.

In experiment 1 the skin and all tendon attachments around the left knee-joint were severed, as well as the ligamentum patella. The femur, then placed in a vice and the leg grasped with the hands, was hyperextended and twisted until the joint was subluxated.

A careful dissection showed no gross lesions of the capsule. The external lateral ligament was partly torn from its attachment to the external condyle of the femur; the tear involved the bony and not the ligamentous tissues, showing a plain sprain-fracture. It would appear that the tear was due to the lateral twist, as it did not occur in the direction of the course of the ligament.

Before this experiment a weight of 160 to 175 pounds was hung from the tibia, under which weight the tibia did not give way.

In the second experiment the right thigh was held firmly in the left hand and the lower part of the leg in the right hand; both were now twisted and hyperextended.

Dissection of the parts showed epiphyseal separation of the head of the tibia and a sprain fracture at the attachment of the patellar ligament to the tibia. It was noted that the tendon had pulled away with it a piece of bone. There was also a fracture

of the crest of the tibia at the epiphyseal juncture. There was no lesion of the knee-joint ligaments, tendon or bones.

In the third experiment the scapula was held firmly in the right hand and the humerus in the left. All motions encountering resistance were persisted in until that resistance was overcome.

Upon dissection it was found that the shoulder-joint was uninjured. A comminuted fracture was noted extending a short distance above the glenoid fossa throughout the balance of the scapula.

In experiment No. 4, after making an incision over the left knee-joint, the tendon of the quadriceps muscle was cut and freed laterally. The cut end of the muscle was grasped in a vice near the tibial end of the patella and by traction was pulled from the tibia in the normal direction of the tendon. At this point the patellar ligament was sectioned and in like manner torn from its attachments, bringing with it some of the bony tissue. Upon examination of the ligament it was noted that some of the fibers were also torn.

In experiment 5 the semi-membranous tendon was exposed and grasped near its center by a vise, and traction by means of weights in natural direction was applied. The tendon ruptured at the point where it was grasped. There was no change found in its bony attachment. The vise appeared to devitalize the tendon at the point at which it was applied.

In experiment No. 6 we find a repetition of No. 4. Upon dissection there was found no rupture of the quadriceps extensor tendon, but a portion of the bone torn loose with the tearing of the tendon attachment.

In No. 7 we find the tendon of origin of the right triceps was exposed and tension was made in its natural direction in the usual way. Upon dissection it was found that the tendon had pulled away the bony cap to which it was attached. The tendon tissue was uninjured.

In experiment No. 8, after removing the skin from the left ankle-joint, all tendons were severed above and below the joint.

The tibia was placed in a vise and a weight hung on the foot in such a manner that part of the weight was supported by the os calcis and the balance by the anterior part of the tarsal bones. Upon dissection it was found that there was a fracture of the calcaneum, involving the surface, articulating with the astragalus. The ligaments were not torn.

Experiment No. 9 was similar to No. 4. Dissection of the parts in question showed no rupture of the patellar ligament, but rupture of the bony tissue to which it was attached.

In experiment No. 10 the tendon of the tibialis anticus was isolated and torsion was applied in the usual manner. Dissection showed no tendon injury but a tearing of the bone to which the tendon was attached.

In experiment No. 11, after removing the skin from the right ankle-joint, the tendon Achilles was cut and the distal end grasped in a vise and a weight applied in the usual manner. The foot was also placed in a vise. Vise No. 1 slipped from the tendon, apparently isolating three parts. The experiment was repeated on that part of the tendon which was overlapped by the other part of the tendon. Upon dissection it was found that the bony structure of the posterior surface of the os calcaneum was ruptured apart, coming away with the tendon. This portion of the tendon last tested was uninjured.

Experiment No. 12 was conducted in a like manner as No. 8. Upon applying the pulling force the hook slipped from its attachment. Upon dissection it was found that the anterior band of the external lateral ligament of the ankle had pulled away some bony tissue at its point of attachment to the astragalus. There was no injury to the ligaments.

Experiment No. 13 was performed in like manner to No. 3. Upon dissection it was found that the semi-membranous tendon had pulled away a portion of the bony tissue at the point of attachment. There was no injury to the ligament.

Experiment No. 14 was a repetition of No. 4. Dissection showed no injury to the patellar ligament, which was shown to have pulled away bone tissue at the point of its attachment.

Experiment No. 15 consisted of exposing the left hip and cutting away all muscular attachments, leaving only the articulation, with its capsule. The femur was then rotated externally, and was also abducted, producing luxation. Dissection showed a tear of the weak upper postero-external portion of the capsule and a sprain-fracture at the insertion of the ligamentum teres.

A VETERINARIAN'S EXPERIENCE WITH SILAGE.—In regard to silage for horses, my experience as a veterinary surgeon may be of some benefit. First-class silage from fully ripe corn may be fed in a very limited quantity in connection with plenty of hay. In most cases the mold is what causes the trouble. I have seen the mold so small and light in color that one could hardly find it unless he looked for it in a strong light. It is evident that one may unintentionally feed silage that is not fit for horses or mules.

Overfeeding is to be especially guarded against in any case. I know of a man who fed his horses himself, a certain amount every day, with no bad results. But when the hired man did the feeding and was not careful the result was fatal to several horses.

When a horse is sick from silage feeding, one first notices that he is not able to swallow. Although drinking as fast as he can he gets very little down. He does not see very well, or appears wrong in his head, as the attendant usually says. He gets unsteady on his legs. He generally goes down in the hindquarters first. At this stage the horse becomes delirious and fights with both fore and hind feet without trying to get up. In a few hours he dies. Another form occurs when they have colic pains, scour badly, and then go down. This form is not so fatal, for they are able to eat and drink a little.

Treatment in most cases is not at all satisfactory. Very few live, or if they do, they are of no use to work for a long time after they get up on their feet.

I give these few symptoms which are familiar to those who have been unfortunate feeders of silage. I have had quite a number of cases in times past, but now no one feeds it in this locality. They regard it as too great a risk to run with horses and mules as high in price as they are at this time.

If one wants some change of feed for horses in winter time, they may grow carrots. They are safe and easily grown in almost any kind of soil. They are especially good for mares nursing foals early in the spring before grass comes.

A COUNTRY VETERINARIAN.—(*Breeders' Gazette.*)

FURTHER STUDIES ON THE BACILLUS BRONCHICANIS, THE CAUSE OF CANINE DISTEMPER.*

BY N. S. FERRY, M.D., DETROIT, MICH.

In the AMERICAN VETERINARY REVIEW, July, 1910, I published an article on the bacterial findings in canine distemper, in which I was the first to describe an organism proven by me to be the primary cause of the disease. At that time I reported the results of my investigation, covering over two years, and showed that I had isolated an organism differing from any previously described. Since the publication of this article it has been found that a disease due to this organism may be more widespread among animals than had been thought. It was known, of course, that all animals suffered with a disease simulating distemper, and many observers have believed that the infection could be carried from one species to another, but up to the time of the publication of the above-mentioned article no organism had been described which proved to be specific. In this article the organism was described in detail, so that no one would have had any difficulty in recognizing it after its isolation. Later, in June, 1911, in the *Journal of Infectious Diseases*, I described in more detail the experiments mentioned in my first article, and gave the name *Bacillus bronchicanis* to the organism.

With several strains of this organism a vaccine was made, and, in order to prove its efficiency for therapeutic, as well as prophylactic, purposes, it was tested out on a large number of dogs and in a few instances on other animals, such as the Canadian lynx, sea lion, fox, etc. The returns from these experiments were very favorable, and well corroborated our own work, which had

* From the Research Laboratory of Parke, Davis & Co., Detroit, Mich.

been carried on previously in the laboratory on dogs obtained from the dog pound. We were very much surprised to learn that the vaccine seemed to produce marked beneficial results in other animals as well, and the striking results convinced us that one organism would probably be found in other species of animals. To prove this was a field well worth exploring, but at that time I was unable to take up that side of the work.

During the past two months a severe epizootic among our laboratory animals has compelled us, in our own defense, to study the condition pretty carefully, and we have found that although the disease, as the symptoms present themselves, differs somewhat in the various animals, yet the primary cause, without a single exception, has been found to be due to the organism previously described by me and named *Bacillus bronchicanis*. In nearly 100 per cent. of the cases the *B. bronchicanis* was found at autopsy in pure culture in the lower trachea. In but a very few of the cases was there any sign of a nasal discharge or any abnormal condition of the eyes. The majority of the rabbits showed symptoms of distemper, commonly called, in the rabbit, "snuffles," while but two or three of the guinea pigs were thus affected, and none of the monkeys. Only one of the animals, a monkey, had shown signs of a cough, which animals gave the *B. bronchicanis* pure in the trachea and blood.

As the organism was found in pure culture in practically every case in the trachea and, in several instances, in the blood, it would seem as though the disease was primary in the respiratory tract, producing often a septicæmia, and in all cases a profound toxæmia. Many of the animals would die with no symptoms other than those of an acute intoxication, namely, a rise in temperature, followed by a sudden fall, loss in weight and severe prostration, with death within a few days.

The questions which now confront us are these: Are we dealing with a purely local condition and are our laboratory animals infected simply from our dogs with a disease which is ever present? Or are we dealing with a clinical entity which is widespread and general? Is it a disease, primarily, of the dog affect-

ing now and then, sporadically or epizootically, other animals? Or is it a disease widespread among animals, with no one species as its regular host?

I will not go into detail in this article as to the symptomatology of the disease as found in animals other than dogs, or attempt to prove at this time that we are dealing with a disease common among several species of animals and not a local epizootic. I believe, however, now that McGowan has found an organism common to dogs, as well as other animals, which organism he claims to be identical to mine, and that I have found my organism to be the cause of a very serious condition among dogs, guinea pigs, rabbits and monkeys, that the name *Bacillus bronchicanis* is not quite the proper name with which to describe this organism of mine. I therefore propose to change it so that it can be applied to the organism as found in any animal, and shall call it hereafter *Bacillus bronchisepticus*.

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NOT HIS FAULT. Racehorse Owner (to jockey, who has only managed to come in fourth)—You duffer, didn't I tell you to keep about third until the last few hundred yards, and then come away and win?

Jockey—But I couldn't come away without the bloomin' 'oss, sir, could I?—(*Tit-Bits.*)

DR. E. D. HUDSON, of Gettysburg, Pa., writes:

Your reminder came to-day,
And my remittance, without delay,
I send to you, my good old friend,
For the 1912 REVIEW please send.
It gives me pleasure to read it through,
That good old AMERICAN VETERINARY REVIEW,
For it's the best I read in years gone by;
To do without it I won't try.

TUBERCULIN TESTING AND TESTERS.*

BY HENRY L. SOMMER, V.M.D., PHILADELPHIA, PA.

In the January number of the AMERICAN VETERINARY REVIEW, as well as in the *American Journal of Veterinary Medicine*, appeared an article on "Bovine Tuberculosis, Its Problem and Control," written by no less an authority than Professor Veranus A. Moore, of Cornell University.

Referring to the above-named article, the writer wishes to openly differ with the professor's views as regards the statement that "legislation cannot help in the control and eradication of the dread disease."

Recently the writer had occasion to be in the State of Wisconsin. This State is known as a great dairy center, and many cattle are daily being shipped out of that State, perhaps into every State of the Union, as well as out into foreign countries. Previous to their export these cattle are tuberculin-tested, and the reactors are condemned and slaughtered.

The testing is done by licensed veterinarians, as well as by "cow-testers," who are six-month graduates from the Agricultural College of Wisconsin. It is needless to say that, according to statistics, the above State stands very high in the errors of detecting tuberculosis. The reason is partly because any of the above-named graduates can become licensed by the Sanitary Board of the above-named State to do tuberculin testing. In consequence whereof many diseased cattle are being passed as healthy, due to the inability of these "graduates" to make a physical examination of the animals to be tested.

In actual practice many an honest veterinarian is being confronted by the everlasting problem of "Bread and Butter," to

* Presented to the Keystone Veterinary Medical Society, Philadelphia, February 12, 1912.

give a chance to his clients, who are the large cattle dealers, "to get rid" of their stock. Many of them are being approached by the above-named dealers to "do better" (meaning not to condemn so many, or very few,) or else they will call in his nearest competitor, who, by the way, is the licensed "cow-tester," or even a neighboring veterinarian. The buyer naturally will get diseased stock and will declare the tuberculin test as a farce, as well as to get him averse to the entire test.

The tuberculin test, as a whole, is a delicate matter, even in the hands of the experienced, and is only accepted by great authorities merely as an arbitrary way of detecting tuberculosis, in view of the fact that we have no other available satisfactory means of detecting the dread disease, let alone leaving it in the hands of the layman and inexperienced.

Many dishonest dealers, being prompted by dishonest designs, have learned enough about the tuberculin test, and will "load" (common expression for injecting tuberculin before testing) their cattle, and thus the tuberculin tester who is experienced will not find the pre-injection abnormal rise in temperature, and thus again pass a diseased animal for healthy.

Such conditions exist, although few care to admit that such practices occur. If such conditions would exist in a few States of the Union, especially in those States that have no "tuberculosis laws," is it a wonder that we cannot eradicate the disease, yea, not even keep it under control?

Would it not be a good idea to take the tuberculin testing out of the hands of these "cow-testers," and even out of the hands of the private practitioner?

The Federal Bureau of Animal Industry could have a department of tuberculin testing in which veterinarians would do nothing else, and depending on nobody but the government, and do the testing of cattle for intra- and inter-State import and export, the same as exists a department of meat inspection.

This would be a radical way of eradicating the disease.

The writer suggests that the International Commission on the Control of Bovine Tuberculosis would take this matter into con-

sideration, although by no means are sanitarians, pediatric societies, etc., invited to stay out.

Of course such a law would have to pass the National Congress, and the writer realizes that such an act would be hard to pass, but is by no means an utter impossibility, if we honestly care to eradicate the dread disease.

So, or similarly so, can we combine honesty with knowledge and be protected by legislation.

AUTOS KILL ELEVEN IN MONTH.—Automobiles killed eleven and injured fifty-seven in New York City during the month of February, according to statistics compiled by the National Highways Protective Society. This death record shows an increase of nearly 300 per cent. over the corresponding month last year.—(*New York World*.)

CABS IN LONDON AND NEW YORK.—A taxicab strike has been in vogue this week in London, and no one seems to have missed the "taxis." The streets have been particularly free to the foot passengers. The old cab horse and cabman have been having an innings. There are 3,300 horse-drawn cabs running on the streets of London at present. Of this number 2,200 are "growlers," and the remaining 1,100 hansoms.—(*London Live Stock Journal and Rider and Driver*.)

OUR DUMB ANIMALS, Boston, Mass., seems to get better with each successive issue. For years we have been ardent admirers of the late Mr. Geo. T. Angel, who founded it and edited it for forty-one years; but it seems to have broadened its scope under the direction of those that have taken up the work of that good man. So that now more subjects of popular interest are treated; even to the discussion of breeds of horses. We believe that all veterinarians would be benefited by reading this friend of the dumb beasts whom they are striving to serve in a medical way; and we wish every veterinarian in America could possess the two first numbers of 1912. Some may be able to procure them by addressing the Editor, at 45 Milk street, Boston, Mass.

REPORTS OF CASES.

TWO INTERESTING CASES, WITH POST-MORTEM FINDINGS.

By WILFRED J. STOKES, Veterinarian Fifth Field Artillery, U. S. A., Fort Sill, Okla.

Case 1.—A jack, aged 4, owned by the "Apache Prisoners of War." Was called to treat this animal, and found a well-marked case of laminitis; temperature, 104, and other usual symptoms; feet fixed to ground, etc. Cold packs were kept on feet and limbs and 2 ounces nitrate of potash, and oil, 1 pint, were given. Oil and potash were given in above doses until bowels became quite loose, and a small dose of tr. opium, $\frac{1}{2}$ ounce, was given to modify this looseness. Animal assumed the recumbent posture for lengthy periods. Temperature subsided gradually within three days to 101, and remained at that point. Pulse good. Never a hearty eater, but appetite remains fair for hay. For about a week there is no subsidence of stiffness, but at this time a *slight* improvement is to be noted. A few days later adrenalin chloride, 1/1,000, was injected—15 m. in center of coronary band at toe and at center of coronary band on each side of foot in both feet. Iodine liniment was also used daily on coronary bands. From this time on a steady decline of appetite and strength set in, and tr. digitalis, nitrous ether and arom. spts. ammon. was given in prescription every three to four hours, with occasional doses of nux vomica, turpentine and aromatic spirits. Little fecal matter is ejected, for little food is taken, but such as is voided is soft. Abdominal symptoms now present themselves—straining and pressing limbs against stall and turning head to flanks. Physostigmine sulphas., $\frac{1}{2}$ gr., is given, with fair results, but no improvement is shown. Morphine is given to check pain, and temperature starts to ascend, and animal succumbs. The most peculiar feature, to me, of this case is the attack of laminitis in an animal doing no work, and but a light eater, kept at liberty in a box stall, and, secondly, the steady improvement in temperature and decline otherwise.

Post mortem revealed no cause for death, there being but a slight congestion of the bowels, and other organs apparently healthy, and lungs congested from constant lying in later stages. Animal was fat, and the kidneys were each surrounded by large masses of fat, weighing several pounds.

Has anyone seen anything similar, and have they theories to offer?

Case 2.—A small bay mare, aged 11, has an attack of colic, which persists for about 18 hours. Bowels finally move and animal makes recovery. About two weeks later is again subject to an attack similar to the previous one, in that the pain is at first subacute and gradually gets worse, in spite of the usual remedies. In the first attack the temperature was 95° or 96° during the entire time, but during the second attack it was about 100°. Repeated doses of arom. spts., 1 ounce; turpentine, ½ ounce; nuxvomica, 2 ounces, and ginger, 2 ounces, in linseed oil, fail to give relief. Little or no peristaltic action is to be heard on auscultation, and ½ gr. eserine and 1 gr. pilocarpine are given. As there is considerable pain, ½ ounce cannabis Indica (fl. ex.) is given, which gives relief. Pains return during the night, and 1 ounce of cannabis is again given, and the animal remains quiet until about 4 a. m. Aromatic spts. and nitrous ether are then given, and about 10 a. m. ¾ gr. of eserine and 1 gr. of pilocarpine are given. Animal is moderately tympanitic, and the eserine causes a great deal of straining and the expulsion of a great deal of flatus. The rectum had twice been emptied manually, showing a little bowel movement, and with the expulsion of the gas and evident relief afforded I hoped that the animal was on the mend. However, the pains recur and patient grows worse. About 7 p. m. there is some regurgitation from the nostrils, and the stomach pump is passed. But a small amount of material comes from stomach and animal immediately turns around and starts to eat hay with apparent relish, but stops in a few minutes and again goes to rolling vigorously. Temperature goes up to 103°. Arecaline, 1 gr., is given and causes a great deal of straining, but no evacuation. Previous diagnosis of intestinal valvulus is apparently confirmed and case is given up as hopeless. Two and one-half gallons of water, warm, and medicated with eucamphol, is then siphoned into the large bowel through the canula and rubber tubing, but without favorable result, and patient is dosed with fl. ex. cannabis Indica and left to itself, and dies several hours later.

Post mortem revealed an adhesion of the mesentery to the under surface of the large colon, which was purulent in character and in which was included a loop of the floating colon, which was in the form of a "U," with the open ends drawn tightly together.

The peculiar feature in this case was the efficient manner in which the first dose of eserine worked, producing an evacuation of a great amount of gas, relieving all tympany in spite of the almost total closure of the bowel, and which led me to believe that my first diagnosis of occlusion or volvulus was wrong.

EQUINE TUBERCULOSIS.*

By R. E. SHIGLEY, M.D.C., Kenmore, N. D.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

It is not my purpose to enter into a lengthy discussion, but merely to state a few facts regarding *Equine Tuberculosis*, together with a case report which, I regret to say, is meagre owing to the distance from the office at which it occurred.

Tuberculosis in the horse is not very common, though the animal is quite susceptible to artificial inoculation of the tubercle bacillus or tubercular material; but it appears that the more healthy outdoor life with exercise, which this animal generally leads, makes it much less susceptible to the natural modes of infection than man, cattle or swine.

However, when tuberculosis is encountered in the horse it is generally found in young animals; and in these the tubercular lesions are most frequently found in the mesenteric and other abdominal glands. These glands are found enlarged, and they form agglomerated, nodular, tubercular masses, the mesentery and omentum is thickened, and the intestinal mucous membrane often shows tubercular ulcers.

The tubercular masses may surround large veins, compressing them, and may rupture into them and discharge the tuber-

* Read before the Tenth Annual Meeting of the North Dakota Veterinary Medical Association, January, 1912.

cular material, bringing about a generalized, acute miliary tuberculosis.

In abdominal tuberculosis in the horse the spleen is frequently found involved, the liver rarely. The former may assume a large size and may weigh 20 to 25 pounds.

Primary pulmonary tuberculosis is generally of the miliary type, while large tubercular nodules and masses are rarely seen in the lungs of this animal. The peribronchial lymph nodes are found enlarged and studded with yellowish nodules. While the respiratory mucosa is sometimes ulcerated, the serous membranes, the pleura and peritoneum when the seat of tubercular lesions, are a picture similar to "*Pearl Disease*" in cattle.

The case observed was in a pure-bred Shire stallion, five years old and weighing 1,780 pounds. He was purchased in Illinois and brought to North Dakota during the spring of 1910.

I first saw him on May 11, 1910, after he had been driven about twenty miles and stabled with the stallions of this locality, awaiting examination for license with the Stallion Registration Board.

On passing through the stable, his attitude attracted my attention; his temperature was taken and found to be 104, with a pulse of 60. He was immediately isolated, fearing influenza.

The following morning his temperature was 102, pulse 48. He was then examined, but not put through the *ordinary* routine. A small enlargement was found at the entrance of the thorax just above the point of the sternum, but, owing to his good condition, palpation did not reveal its outlines distinctly.

Nothing more was seen of the stallion until August 10, when I was summoned to the farm and found him greatly emaciated. The owner stated that he had been running down all summer and had had a chronic cough. The tumor at the entrance of the thorax was now plainly visible and found to be pressing upon the trachea and emerging vessels. Respiration was difficult at 60, temperature 102, pulse 60.

Auscultation over the lungs showed a dulness along their posterior borders, and a peculiar tubular breathing throughout.

An examination on August 13 showed no change. On August 27 pulse and temperature remained the same as on August 10, but respiration was more difficult and rapid, 70 per minute. He now had difficulty in rising and would cough at the least exertion. At no time did he show a loss of appetite or give evidence of any abdominal pain. Notwithstanding his

constant appetite, the emaciation was increasing, and he now was scarcely more than a skeleton. He died some time on September 5 or 6, and the post mortem examination was held late on September 8.

Post mortem: Large tumor at entrance of thorax and adherent to first ribs, crowding all emerging vessels upward and greatly reducing the lumen of the trachea. Pleura normal. Parenchyma of lungs contained nodules, the posterior borders being nearly solid.

The spleen was much enlarged, and three large tumors were hanging from its greater curvature. Several nodules were found in the organ itself, some as large as hickory nuts. A large tumor, about 8 by 10 inches, was found in the sublumbar lymph glands. This tumor was soft in texture. Another large and more fibrous tumor, 7 by 9 inches, was at the origin of the mesentery. Small papiliform tubercles were found on the serous covering of the intestines in contact with this tumor.

All of the intestinal lymph glands were enlarged. Sections of the various tumors and organs were sent to Dr. Van Es, who reported that they contained lesions of tuberculosis, and the bacilli found was of the human type.

TORSION OF THE SMALL INTESTINES.

By A. T. FERGUSON, D.V.S., Evansville, Ind.

I am sending you a report which might be of some interest to some of the readers of the REVIEW. I also send you a photograph of the torsion, which is marked with an X. I am sorry it is not more clear, but it can be plainly seen with a magnifying glass.

I was called at 7 a. m. to attend a black mare, about 5 or 6 years old; weight, about 900 to 1,000 pounds.

The caretaker found her at 5 a. m. down in the stall with what he supposed was colic. On my arrival I found the mare in great distress and doing violent kicking. She had passed considerable fæces, and had also urinated.

At this time the animal was in a considerable perspiration.

I administered 1 grain arecoline, with little or no results, unless it was to increase the intensity of the pain.

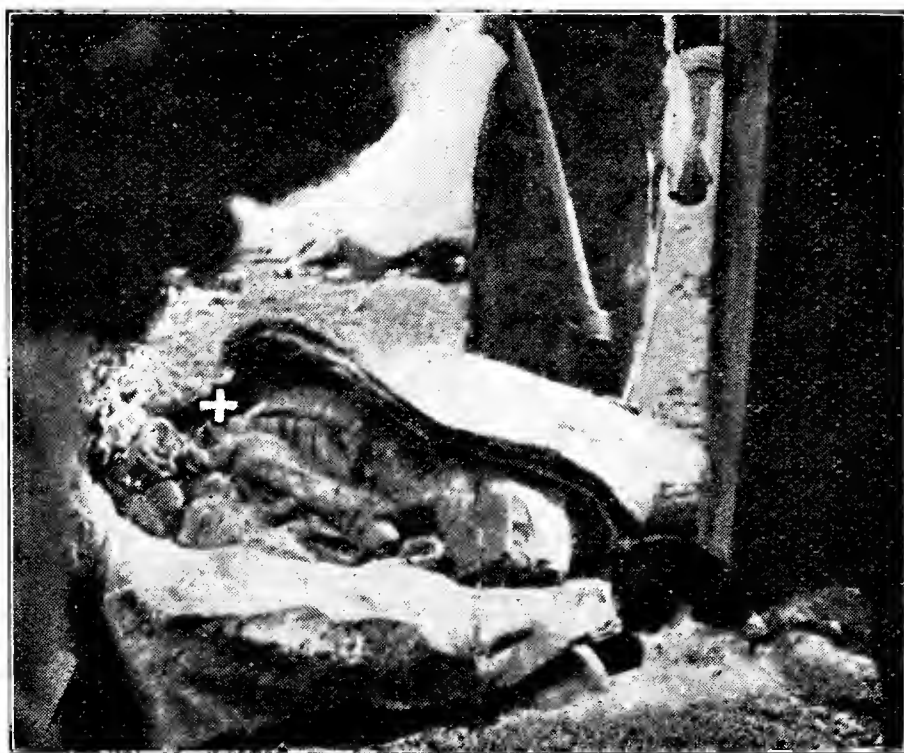
I then administered a purge, consisting of two of Abbott's aloine tablets. After waiting for thirty minutes and seeing no good results from my efforts to relieve the animal, I suspected

something more serious, and proceeded to make a rectal examination.

I at once made my diagnosis as "torsion of the small intestines," and at once notified the owner that in my opinion the animal would not recover.

I then gave two enemas, at intervals of about five minutes, or as soon as the first one had been ejected, but on examination I found little or no change.

I then gave barum chloride, per jugular vein, with no results. The case refusing to respond and the animal growing worse, as a



last resort I gave, one hour after, a tablet of eserine, $\frac{1}{4}$ gr.; pilocarp hydrochlor, $1\frac{1}{2}$ grs., hoping to stimulate the intestines to respond, but this also failed.

The animal was then turned over to another veterinarian.

What he administered I do not know, but I was perfectly satisfied that the animal could not possibly recover.

The mare died some time during the same evening.

I then made up my mind I would verify my statement by holding a post mortem, and went to the expense of buying a camera to take a picture of this animal's internal organs.

I am sorry it is not clearer, but the torsion can plainly be seen.

It is a complete torsion of the small intestines, and you will notice the strangulation of the torsion and engorged hyperæmia, which of itself is sufficient evidence that the diagnosis was correct.

I have taken particular pains in treating animals for colic and

intestinal troubles to carefully observe the animals' various symptoms and their peculiar performances.

I have noticed that as a usual thing if there is a misplaced bowel that the animal is in great agony, and that this seems to increase as the time of suffering is lengthened. That the animal will make several efforts before he finally decides to go down. That there is usually a rise in temperature of from 1 to 2 degrees. That the perspiration is intermittent and patchy. The pulse becomes weak before the end, and what is most deceiving to the novice is that the animal will continue at intervals to pass fæces in very small quantities, one ball at a time, and usually soft, so that one might suppose that the intestinal tract was clear, which, of course, is true posteriorly to the torsion.

I have had one case similar that was allowed to roll in a box stall, and the torsion straightened out spontaneously, and immediate relief was noticed.

I had given orders that this mare be placed in a box stall and allowed to roll all she pleased, but my orders were disobeyed, and the animal walked around until she became too weak to do so, and the end came.

I am now satisfied that many animals die from similar causes that are too often treated for impaction of the colon.

But with careful observation of all cases that come to the careful practitioner no such mistakes should occur, and with proper examination and diagnosis the owner can be warned hours before what in all probability the termination will be, and by so doing will not only save himself a whole lot of adverse criticism, but will materially add to his prestige with the owner of the animal and with the community, which too often is ready to belittle the profession.

AN INTERESTING CASE.

BY A. T. KINSLEY, M.S., D.V.S., Kansas City, Mo.

On January 27, a 1,400-pound draft gelding, used on a coal wagon, suddenly began to stagger, fell and died within a few moments. The owner of this horse was anxious to ascertain the cause of death, because of the fact that the horse had been run into by a street car on January 9, and the outcome of a suit for damages would largely depend upon the proof of injury or injuries received at the time of the street-car accident. The

horse was examined immediately after the accident, but he was in good condition, and no specific injury was detected. The horse had been out of service for thirteen days, *i.e.*, from the 9th to the 22d of January, and had been working regularly for six days, *i. e.*, until the 27th, when he died. During this time the driver said the horse was not quite normal, seeming to lag a little, but had shown no particular distress and had been used in pulling quite heavy loads.

The dead horse was sent to the hospital of the Kansas City Veterinary College and autopsied on January 28. The entire abdominal viscera were found to be normal, excepting that all organs were anaemic, *i. e.*, pale and bloodless. Upon opening the thoracic cavity, several gallons of blood escaped. The blood had partially coagulated, and there were deposits of coagula upon various parts of the pleura. There were also several areas containing pigment, particularly in the visceral pleura of the right side. After carefully removing each lung, leaving the heart in position, it was noted that on the right side there was a marked local lesion of the pleura, and on closer inspection it was found that the fifth to the tenth ribs, inclusive, had been fractured about midway between the vertebrae and sternum. The sixth rib had been comminuted, and one portion of detached bone was deflected and retained by the adhering pleura and projected through the visceral pleura and pericardium into the pericardial sac. This fragment of bone had gradually eroded the right auricular wall and finally punctured into the auricular cavity and produced fatal hemorrhage. The fracture had not occurred recently because the pleura and subpleural tissues had retracted and adhered firmly to that portion of the sixth rib which projected through the pleura and pericardium; and upon further examination of the location of the fractures in the other ribs it was found that they were surrounded by thick callouses of granulation and fibrous tissue, which indicated that the fractures were of at least fifteen to twenty days' standing.

This case is of special interest because the animal was not thought to be seriously injured at the time of the accident and because the puncture of the auricle was gradually brought about as a result of the contraction and dilation of the heart that terminated fatally as a result of hemorrhage, which occurred immediately after the puncture.

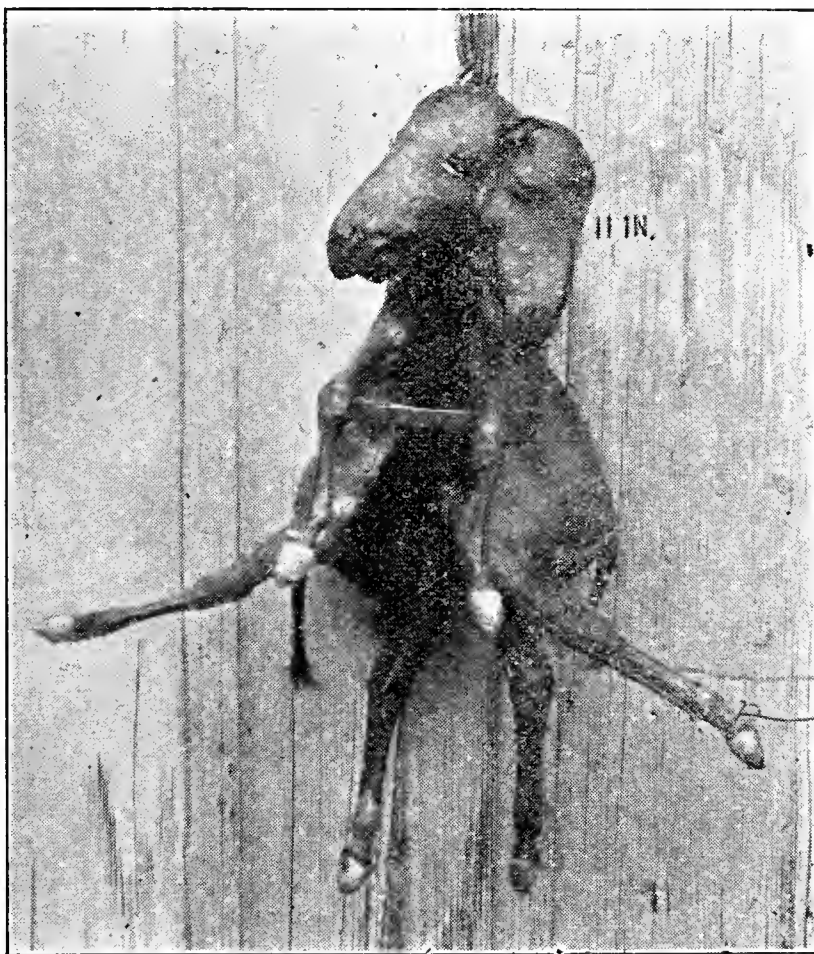
From the appearance of the coagula and the blood within the pleural cavity, the hemorrhage had occurred just prior to

the time of death. The pigmented areas in the right parietal pleura were no doubt due to hemorrhage at the time of the original injury. If a piece of rib had not punctured the heart, it is possible that the horse would have made as uneventful recovery, and no one would have known that he was able to pull heavy loads in spite of six fractured ribs.

A MONSTROSITY.

By C. H. GARNER, V.S., Ovalo, Texas.

The accompanying photos show what I delivered from a mare on the night of February 11, 1912. They consist of two separate horse colts behind, with two spines, but in one body. A single



set of shoulders and front legs, single chest, one neck and two heads. It lacked 120 days going its full time. I have it mounted and in my office.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TUBERCULOSIS IN THE DOG [*E. Wallis Hoare, F.R.C.V.S.*].—The subject was an Irish setter dog, aged 15 months. Purchased when 5 months old; he then was in poor condition and looked unhealthy. But with good care and liberal feeding he improved slowly. After some ten months his condition changed—he had capricious appetite, quick respiration, and though with no cough he rapidly lost flesh. When seen by the writer he looked poor, with respiration accelerated, marked heaving of the flanks, abdominal breathing. On percussion the right side was completely dull and on auscultation there was complete loss of respiratory murmur. The left side presented the same signs, but far less marked. Cardiac sounds were indistinct and cardiac impulse weak. There was some ascitis, but no cough or nasal discharge. A diagnosis was made of pleurisy with affusion, probably tubercular. The dog died before tuberculine test could be applied. At the post mortem an enormous amount of fluid was found in the thorax. The right lung was pressed against the vertebral column and collapsed. Costal pleura of both sides inflamed and with very small tubercles. The examination made of the sticky, frothy exudate, which filled some of the bronchial tubes, revealed the presence of numerous free tubercle bacilli; readily recognized by microscopic examination and staining with Ziehl-Neelsen.—(*Vet. Record.*)

CHONDROIDS IN THE GUTTURAL POUCHES [*S. N. Woodward, M.R.C.V.S.*].—Seven-year-old cob had a swollen throat. He had lost appetite and taken no food lately. The swelling extends over both parotids and under the throat. It is firm and hard. The temperature is normal, pulse weak and thready; a marked jugular pulse is present. Inability to swallow is accompanied with return of water by nostrils in the attempt at drinking. Thick nasal discharge. Exploration with trocar through the parotids brings

out a bead of pus. Cutting down the swelling and breaking through the tissues with the fingers forty-eight chondroids were extracted. The guttural pouches were syringed with permanganate, and belladonna electuary given frequently. After several days 74 more chondroids were removed, making a total of 113 chondroids extracted, and weighing 26 ounces. The largest chondroid weighed $6\frac{1}{2}$ drams. There was also washed a pint of thick, white substance. Recovery was complete after a short time.—(*Journ. of Com. Pathol. and Therapeut.*)

DIFFERENTIAL DIAGNOSIS BETWEEN TORSION AND SIMPLE IMPACTION OF THE PELVIC FLUXURE OF THE COLON [*H. Caulton Reeks, F.R.C.V.S.*].—In a long and very interesting article, illustrated by valuable photographs, the author presents the following important points as a means of differential diagnosis:

In Impaction.—1. Periods of ease, manifested by the patient maintaining a sleepy, stretched-out position, on the floor for quite long periods. 2. Pulse full and normal in number of beats, except during the paroxysms of pain. 3. Respirations deep and regular, only becoming quickened and catchy during pain. 4. Temperature normal. 5. No straining on rectal examination. Rectum ballooned. No marked spasmodic condition of its walls. 6. Rectal examination reveals the presence in the pelvis of the ingesta—packed in pelvic flexure.

In Twist.—1. Constant pain exhibited by continual crouching movements and marked disinclination to lie down. A dog-like attitude when down and frequent twinges of acute pain. 2. Pulse constantly weak, quick, and slowly progressing to a running-down character. 3. Respirations short, catchy and labored or sobbing. 4. Temperature raised to 103° F. 5. Marked straining on rectal examination, with spasmodic claspings of the bowel on the inserted arm. 6. The pelvic flexure is altogether missing from its position in the left flank.—(*Journ. of Comp. Patho. and Thera.*)

IMPACTION OF THE SMALL INTESTINE IN A HORSE [*C. N. Meyers, L.V.Sc.*].—This pony was in pain since twelve hours. Visible mucous membranes injected; pulse, 50; temperature, 102° F. Little peristalsis of the intestines; no apparent tympanitis. Bladder distended and large quantity of urine taken away. Rectal examination reveals hard fæces on the left side. Treatment was negative. Post mortem showed gaseous distension of stomach

and intestine. Large colon almost empty. Cœcum has few hard pellets of food material and enormous number of sclerostoma equinum. At the ileo-cœcal valve, within the cœcum, there was a large nest of tapeworms and at this point the mucous membrane was neurotic. Anterior to the ileo-cœcal valve, within the ileum and filling it for a length of about 2 feet, distending the diameter of 4 inches, there was a firm mass of recently ingested food material. The tapeworms seemed to have caused a paralysis of the intestinal wall at the ileo-cœcal valve.—(*Veter. Journ.*)

DISLOCATION OF THE CERVICAL VERTEBRÆ [*W. Waters. M.R.C.V.S.*].—Six-year-old mare is found one morning unable to get up. She is tympanitic, the anus and vulva greatly swollen, in great pain, covered with profuse perspiration, and remains insensible to the pricks of a pin made on the limbs. Pulse is fast and weak. Attempts are made to put her in slings, after pulling her from her stall, and when she is about being raised her head drops suddenly and the mare expired. A coarse post-mortem examination revealed a complete dislocation of the third and fourth cervical vertebræ, with extensive inflammation of the neck.—(*Vet. Record.*)

ETIOLOGY OF CANINE DISTEMPER [*N. S. Ferry*].—Ferry has made a bacteriological study of distemper in dogs and has isolated an organism, *Bacillus bronchicanis*, which is, he believes, the cause of the disease. Various other bacteria were isolated from discharges from the eye and nose, and from the contents of cutaneous pustules; but it appeared that all so isolated were present as secondarily infecting parasites. On a routine examination of the secretions of the larynx, trachea, bronchi, lungs and blood of dogs, which had been killed while in various stages of infection, 97 strains of *B. bronchicanis* were obtained. In 63 cases quantities of from 1 to 3 c.c. of blood were drawn off from the heart, and either put into a 50-c.c. flask of broth or distributed in several tubes of broth. In 18 of these cases *B. bronchicanis* was obtained, in pure culture in 13 cases, and in company with other bacteria in 5. In 11 other cases cultures of other bacteria were obtained. *B. bronchicanis* is described as a short, narrow bacillus, occurring sometimes singly and sometimes in pairs, showing a moderate, slimy growth on nutrient agar. On potato growth is fairly abundant after 24 hours' incubation at a temperature of 37° C., having a raised moist, glistening, uneven surface, of a light-tan color, which darkens with age. Growth occurs on gela-

tin and blood serum, without any liquefaction of the medium. Cultures in dextrose, mannite, maltose, saccharose, lactose and glucose broth have an alkaline reaction, and there is no formation of gas. In litmus milk there is some bluing during the first three days of incubation; color is gradually discharged from below upwards. There is not any formation of indol in pepton solution. Cultures on potato and in milk and nutrient broth have a disagreeable odor. The organism was pathogenic for healthy puppies on intratracheal inoculation, or when a broth culture was applied directly to the nostrils. Negative results were observed, with subcutaneous and intravenous inoculation. Altogether, *B. bronchicanis* was isolated from 97 dogs after death. In 68 cases it was isolated in pure culture from either the respiratory tract or from the blood; out of 18 successful cultures from the blood the bacillus was the only organism present in 13 of the cases.—(*The Med. Officer and Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

VARICOSE PHLEBITIS OF THE MAMMARY VEIN IN A COW, WITH SPONTANEOUS HEMORRHAGE SIMILAR TO SAME DISEASE IN MAN [*MM. Prof. G. Petit, Adjunct B. Germain and Mr. Chapelier*].—Norman cow, in good condition, excellent milker, without pathological history, aged 12 years, is in the eighth month of pregnancy. One day she is suddenly taken with very abundant mammary hemorrhage, which gradually subsides, and is arrested as well as possible with a pad and surcingle by the owner. The hemorrhage is coming from the right anterior mammary vein, near its entrance in the abdomen. There the skin is very thin, and it is difficult to secure enough of it to close the wound with the ordinary pin suture of ordinary bleeding. On a level with the wound and back of it, on the course of the vein, which is of ordinary size; not exaggerated as commonly observed in old milkers, there are two little swellings, hairless, where the skin is also thinned out and almost ready to burst. The next day another violent hemorrhage takes place. Perchloride pads are necessary to control it. Eleven days after, another hemorrhage. It has occurred in the night, and when discovered the cow is literally covered with blood. The general condition of the animal has suffered much from these repeated losses of blood and she

is sent to the butcher. By the careful examination of the veins and its histological study, the case was considered as a chronic varicose ulcerative phlebitis, similar to those that are quite commonly observed in man.—(*Bullet. de la Soc. Cent.*)

CONGENITAL DIAPHRAGMATIC HERNIA OF THE STOMACH AND SPLEEN [*Adjunct Prof. Lesbouyries.*].—After a few days of illness this horse died quite suddenly. At the post mortem, on opening the thoracic cavity, large quantity of undigested food was found, and between the folds of the posterior mediastinum were the stomach and spleen, floating in a bloody liquid. Both of these organs were in the thoracic cavity, the stomach hanging through a diaphragmatic opening, with the piloric portion of the small intestine in the abdomen, and forming a very acute angle at the point where the stomach passed through the diaphragmatic ring. The case was then one of strangulation through said ring. There was also hepatization of the right lung, congestion of the left and rupture of the stomach at the small curvature. The spleen was strangulated also on its external border, and the center of the aponaurotic portion of the diaphragm showed the circular opening through which the hernia had taken place, lacerated on its left side, but presenting the characteristic lesions of congenital diaphragmatic hernia. During life the auscultation of the chest had revealed only symptoms which justified a diagnosis of typhus affection, although the percussion, quite suspicious, observed with clearly marked borborygms, had attracted attention. The animal had no colics, had a comparatively quiet respiration, ejected feces with foetid odor, and died when nothing indicated such a sudden and rapid end.—(*Rev. Vet.*)

SPONTANEOUS EXPULSION OF THE COTYLEDONS IN A COW [*Mr. Larrieu*].—This must be a very rare occurrence, says the writer, as he has never seen it during thirty years of practice, and it has, so far as he knows, never been recorded in professional literature.

Primiparous Normand cow had two calves. The delivery was comparatively easy. The expulsion of the membranes took place naturally and no abnormal vulvar discharge followed. After a few days of apparent alteration in her condition, the animal makes violent expulsive efforts and throws out some 20 fleshy masses, as big as a hen's egg, convex on one face, concave on the other. They are whitish, spongy and odorless. They are uter-

ine cotyledons, loose from the mucous membrane. By manual examination 16 more are found loose and extracted. Antiseptic injections are prescribed. The next day 10 more cotyledons are expelled. With this all bad symptoms subsided; no more straining efforts; rumination returned; the cow was well. It is interesting to bear in mind that in this case the accouchement occurred in excellent condition, that the expulsion of the membranes took place early and readily, without pulling, and that the expelled cotyledons were of large size and did not seem to have undergone the rapid involution observed ordinarily after parturition.—(*Rev. Vet.*)

COCAINE AND ADRENALINE IN ACUTE AFFECTIONS OF THE FOOT [*Mr. P. Cozette*].—The author relates his experience in the treatment of three cases of severe acute laminitis and two of acute arthritis of the foot, which recovered in a short time, after having been relieved of the acute pain with subcutaneous injection of cocaine and adrenaline. In the first of the cases of laminitis the cocaine was used at the beginning and adrenaline added to it, with far better results. Three injections only were required. In the two other cases the cocaine and adrenaline injections were required only twice. In the two cases of acute arthritis of the foot the injections were also followed by marked relief, but with them they were repeated every day for 10 and 15 days. It is well understood, however, that the use of adrenaline and cocaine is to be considered merely as an auxiliary which is recommendable, but does not exclude the additional ordinary treatment.—(*Rep. de Pol. San. Vet.*)

PRIMITIVE TUBERCULOSIS OF THE FACE IN A CAT—AUTO-INOCULATION [*Adjunct Prof. Charmoy*].—Aged about 10 years, this black-and-white cat has since several months a number of ulcerated wounds which have remained rebellious to all kinds of treatment. Half of the right side of the face is invaded by a wide, irregular ulceration, involving also the greatest part of the upper eyelid, the internal angle of the eye and spread downwards on the nose. The ulcer is deep, funnel-like, and gives out sanious yellowish, thin pus. The parts round are swollen and the face considerably deformed. There are also two smaller ulcerations on the cheek and temporal region. The lymphatic glands of that part of the face are hypertrophied, hard, bosselated and not adherent to the skin. Respiration is loud and labored. There are also one

ulceration on the vulva and a smaller one on the margin of the anus, and again one on the inside face of the right paw. These last are probably the result of scratching and licking of the animal, and, of course, the source of the auto-intoxication. Tuberculous bacilli were found in some of the tissues taken from the ulcers and confirmed the diagnosis of tuberculosis which had been made. The post mortem showed also tuberculosis of the cervical lymphatic glands of the right side and in the mesenteric glands. The lungs were free from tuberculous lesions.—(*Rec. de Med. Vet.*)

TREATMENT OF TETANUS WITH SULPHATE OF MAGNESIA, PHENIC ACID AND ANTITETANIC SERUM [*Mr. Jean Camus*].—The writer has treated comparatively tetanic dogs with the sulphate of magnesia, phenic acid or antitetanic serum, pure or mixed with pepsin. The sulphate and the acid have no action on the development of tetanus. The sulphate reduced temporarily the contraction and the excitability. The acid may have an antiseptic influence on the tetanic bacteria, but is without action upon the toxin when it is fixed on the nervous centers. Phenic acid in the doses which were used seemed to have no immediate bad effects; the sulphate injected in the cephalo-rachidian fluid has. A dog treated with both the sulphate and the acid did not live any longer than the other dogs of the same series. With antitetanic serum alone, injected simultaneously in the cephalo-rachidian liquid, in the veins and under the skin, superior results to those of the other modes of treatment were observed. Treated with pepsin, the serum seemed to give better chances of success. All the results obtained, however, were very irregular.—(*Soc. of Biology.*)

GERMAN REVIEW.

BY JOHN P. O'LEARY, V.M.D.

PITRYASIS IN THE ARMY HORSE AND ITS TREATMENT [*Military Veterinarian Videlicet*].—That pitryasis is difficult to cure is evidenced by the fact that notwithstanding the strong applications usually employed are effective in destroying the insect, but ineffective as regards the destruction of the eggs. The author had more than forty cases occurring among the horses

of his regiment. He applied the following preparation with good results in each case:

Pulv. Florum Pyrethri	5.0
Spirit Denaturatus	60.0
Natrium Carbonicum Crystallisatum ...	20.0
Aqua	200.0

The insect powder is macerated 4 or 5 days in the alcohol and shortly before using the maceration is mixed with the soda solution; the latter is intended for the destruction of the cutin capsule of the egg. The horse is first clipped and the whole body sponged with the fluid. If the hair is not removed, particular care should be taken that the application impregnate the roots of the hairs. In this manner a single sponging not only kills the insect, but also the greater number of the eggs. The remainder die in the course of a few days.—(*Berliner Tieraerztl. Wochenschrift*, No. 6, 1912.)

THE TREATMENT OF THE CUTANEOUS INFLAMMATION CAUSED BY THE FILARIA IRRITANS [*Anton V. Toth*].—For some years past the author had occasion to observe and treat many cases of cutaneous inflammation caused by the *Filaria Irritans* appearing in the withers and shoulders of horses.

In the beginning small round nodules, about the size of a pea, are observed on the shoulders and withers, the hair stands erect on these spots, it soon falls off; the part becomes crusty and dry. Soon the scab falls away, leaving a small ulcerated surface, in the center of which shot-like elevations appear. In these little shot-like nodes the larva of the *Filaria* can be distinguished by the aid of the microscope. In extensive affections of this nature, which were treated surgically and medicinally, for instance, with carbolic acid, creolin, corrosive sublimate, iodoform, even the actual cautery, little success had been attained, for under the old crusts nodules appeared anew. Finally the author succeeded in discovering a remedy: an arsenical paste which had given good results in all cases. The prescription is as follows:

R Acido Arseniosi Pulverisati	5.0
Farina Secalis	25.0
Aquae Destillatae	q. s.
Misc. fiat pasta.	

This paste is spread over the moist, ulcerous surface, to which it adheres. The next day the parts have become swollen and odematous, and on the surface of the ulcer there appears a thick, black crust. In about the lapse of a week the inflammation disappears, and the scab becomes detached, leaving behind a healthy surface, which heals in about 10 days, no further treatment being necessary.—(*Allatorvosi Lapok*, 1910, No. 29.)

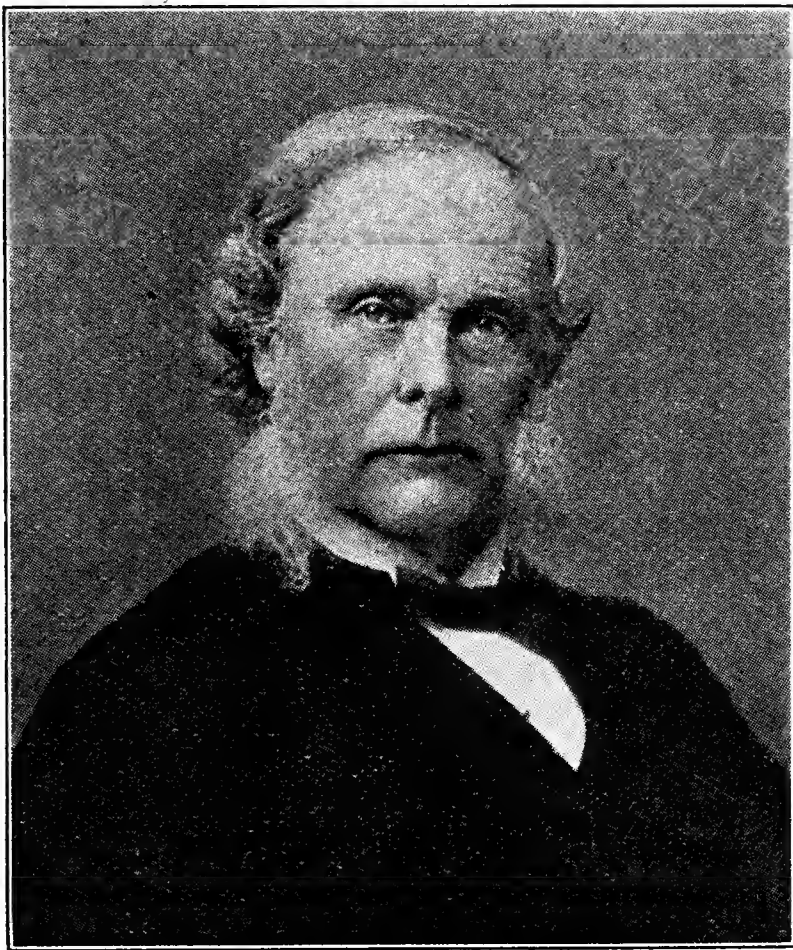
THE APPLICATION OF POTASSIUM IODIDE-MERCURIAL OINTMENT [*Military Vet. Lanceleur*].—Five grammes of potassium iodide are rubbed up to a fine powder in a mortar and sufficient glycerine added to form a solution. To this solution is added 20 grammes of mercurial ointment. This preparation must be freshly prepared when required for use. Before this remedy is applied the hair must be cut off the part, then a quantity of the ointment smeared over the surface with the fingers and then rubbed in briskly with a hard tampon for at least five minutes. Twelve hours later small vesicles appear. There is no irritation present. The slight swelling soon disappears, the epidermis exfoliates, and in about 10 days resolution sets in. This ointment is particularly recommended for haematoma of the knee and tumors resulting from pressure. After 3 or 4 applications deep-seated cysts are cured and in tendinitis much better results are obtained from its use than after severe blisters. In order to effect a cure it will be necessary to repeat the application every sixth or seventh day.—(*Berliner Tieraerztl. Wochenschr.*, No. 37, 1911.)

DR. LEECH TOO GOOD AN INSPECTOR TO SUIT DAIRYMEN—The Winona Daily *Republican-Herald* and the Winona *Independent* of March 5 contained articles to the effect that the dairymen supplying milk to that city were going to discontinue bringing their milk to Winona unless Dr. G. Ed. Leech was removed from the position of City Milk Inspector, on the ground that they did not like his personality. In the same paper Health Officer Donald B. Prichard, under whom Dr. Leech works in the interest of the city of Winona, spoke very highly of the doctor's ability, and explained that the dairymen's *real* grievance was that they wanted to have a veterinarian of *their* employ inspect their dairies and their milk instead of one in the city's employ. He did not think, however, there was much fear of their discontinuing to bring in their milk.

OBITUARY.

JOSEPH LISTER, M.B., F.R.C.S. (Eng.).

We regret to announce that the Right Hon. Lord Lister, O.M., died from an attack of pneumonia on Saturday, February 11, at Walmer, in his eighty-fifth year, after an illness of four days. Joseph Lister was born at Upton, in Essex, in 1827, his father, Joseph Jackson Lister, F.R.S., being the inventor of the achromatic microscope. He was educated at a Quaker school in Tottenham, and in this connection it is interesting to note that



LORD LISTER.

the Prince of Wales' General Hospital (then known as the Evangelical Protestant Deaconesses' Institution, Tottenham, or the Tottenham Hospital) was the first hospital in London to apply the Listerian treatment. He had lived from childhood in an atmosphere of scientific research, and began his studies on the medical side of the college with unusual qualifications for pursuing

them to advantage. He became M.B. at the London University in 1852, and in the same year took the F.R.C.S. (Eng.).

After holding office for a time as a resident assistant in University College Hospital, Lister went on an autumn holiday to Scotland, taking, among other letters of introduction, one from Professor Sharpey to Professor Syme, then at the height of his reputation as a surgeon. He saw at Edinburgh so much that was important and instructive that he obtained permission from his father to extend his stay, and he remained, first as a supernumerary dresser under Mr. Syme, and afterwards as his house surgeon. On resigning his post, in 1856, he married Mr. Syme's daughter, and was soon afterwards appointed assistant surgeon to the Edinburgh Royal Infirmary. In this position he began to teach, as a private lecturer on surgery recognized by the university, and continued to do so until his appointment to the chair of surgery in the University of Glasgow in 1860. He had already contributed a series of important papers to the Royal Society—papers chiefly based upon microscopical research—and in 1860 he was elected a fellow. In 1863 he was appointed by the society as Croonian lecturer, and selected as his subject "The Coagulation of the Blood." About the same time he was a contributor of the articles on "Anesthetics" and on "Amputation" to "Holmes' System of Surgery," and had written other papers of very considerable merit.

In the early sixties Lister became acquainted with the work of Pasteur, whose two great hypotheses—that putrefaction is caused by the agency of living germs, and that these germs are not spontaneously generated—Lister made his own and converted to unthought-of uses, with what results are well known, not only to the whole medical profession, but also to the whole civilized world. Focussing his giant intellect upon the one great object, how to protect wounds from germs of inflammation, he devised the carbolic spray and carbolic gauze, or the Listerian bandage, as it was then called. The effects upon surgical mortality were striking and immediate, no such curative results having been previously obtained. In consequence, operations of much greater magnitude were undertaken with confidence by surgeons which formerly none would have dared to perform. The system soon spread, and was speedily taken up in Germany, as well as in this country. Another great advance in surgical art is also associated with Lister's name—the use of the absorbable catgut ligature, which he introduced as a substitute for the silken or flax thread

hitherto exclusively used. The work, which had been commenced in Glasgow, was transferred to Edinburgh in 1869, Lister in that year succeeding his father-in-law, Professor Syme, in the chair of clinical surgery in the university of the last-named city. In 1877 an opening was made for him at King's College, London, and he consented to go there as professor of clinical surgery, a post which he held until 1893, by which time his work was practically done, and the splendid service which he had rendered to mankind could no longer be questioned or concealed. The honors that awaited him were, perhaps, of little importance compared to his high services, but they were never more justly bestowed. On Mr. Gladstone's recommendation he was, in 1883, made a baronet, and in 1897 he was raised to the peerage. In 1902 he was appointed a member of the newly instituted Order of Merit, as well as a privy councillor. From 1895 to 1900 he was president of the Royal Society. He was sergeant-surgeon to Queen Victoria and to King Edward, and has been president of the British Association for the Advancement of Science. His other scientific distinctions would require more than a column for their mere enumeration.

Lady Lister, to whom he was devotedly attached, died in Italy in 1893, and he leaves no heir.—(*Veterinary News*.)

C. W. JOHNSON, D.V.S.

Dr. C. W. Johnson was born at Elburn, Ill., in 1855 and spent the early part of his life on a farm, later becoming a student of pharmacy and subsequently a practicing pharmacist. In 1885 he began the study of veterinary medicine at the Chicago Veterinary College, receiving the degree of D.V.S. in 1887. Dr. Johnson practiced for a time in northern Illinois, when he entered the service of the Bureau of Animal Industry in which he continued for ten years, serving in Omaha and Chicago. When the army was reorganized after the Spanish-American War, Dr. Johnson was transferred from the Bureau of Animal Industry to the Subsistence Department of the Army, where he continued, doing duty at Chicago almost exclusively, until the time of his death December 29, 1911, serving the Government in all about twenty years, during which time he gained an enviable reputation as an inspector; capable, exacting, careful. About eight or nine months prior to his death, his failing health becoming apparent, he was

ordered down to the maneuver camp, San Antonio, Texas, to inspect army supplies. Growing worse he was placed in the maneuver camp hospital, and afterward in the Army Hospital, St. Elizabeth, Washington, where he died. Being a mere citizen under our present system, although giving twenty of the best years of his life to the Government, a goodly part of it in the Army, his pay was stopped soon after he entered the hospital. Think of the injustice and hardship to his family, and awaken to the position of your brother veterinarians in the Army.

NATHAN M. DRAKE, Ph.G., D.V.S.

Nathan M. Drake, of 1308 Morris street, Philadelphia, Pa., passed away February 26, 1912, from cirrhosis of the liver.

Dr. Drake had been in practice in Philadelphia for more than twenty-one years. Prior to entering the veterinary profession he had been a practicing pharmacist for more than twenty years. He graduated from the American Veterinary College, New York City, in 1890, and after one year's practice in Brooklyn, came to Philadelphia and continued in active practice until a few weeks before his death.

He was considered by a large clientage as one of the most successful diagnosticians in his profession, and with his brother enjoyed a large and successful practice in the southern part of the city.

Born in northern New Jersey in 1855, he was in his fifty-seventh year. His remains were taken to his old home for interment.

PARTICULARS WANTED.—“Yes, that's Dr. Bloggs.”

“Allopath, homeopath, horse, or divinity?”—(*Indianapolis Journal*.)

Dr. G. J. COLLINS, West Point, Neb., in renewing his subscription, says: “The REVIEW must be received regularly to be appreciated.”

DR. M. J. SMEAD, of Yale, Mich., says of the AMERICAN VETERINARY REVIEW: “Every copy is a feast of good things and I could not possibly be without it.”

THE North Dakota Veterinary Association held a splendid meeting at Agricultural College in January. Secretary Babcock's report of it appears on page 127 of this issue.

CORRESPONDENCE.

THE CAUSES OF MARKED VARIATIONS AT BIRTH.

BARBADOS, W. I., February 25, 1912.

The Editor of the AMERICAN VETERINARY REVIEW:

One of the fundamental principles of organic evolution is as to the cause or causes leading or giving rise to variation at birth. It is fundamental, since all progress in organic evolution is dependent on the appearance of such variations. Now, I hold that marked variations—not monstrosities which are pathologically produced—are due to certain extraordinary features in the environment acting on the organism, when in young, and that through the nervous system, such an influence is reflected on to the embryo, leading to such a characteristic variation at birth. In order to establish my position, I solicit the aid of veterinarians by a process which is simple and easily carried out. So far I have succeeded in this way: Learning from my mother that my father (dead) had produced tailless pups, by striking the tail of the bitch when in young, with the side of the hand as if to sever the tail, while she was soundly asleep, I tried the experiment with a cat, in no way connected with a tailless breed, and succeeded in getting two tailless young ones, one with a tail broken at that point and one with a normal tail. My success induced a friend of mine to try the experiment, which also succeeded. As the experiment, if successful beyond all doubt, will settle, once for all, perhaps the most important question in biology, I solicit the aid of the veterinary profession in settling the question, and I ask that the results of all such successful experiments, fully certified, be published in the pages of the AMERICAN VETERINARY REVIEW. Trusting that the importance of the question will attract the attention of your readers and gain their co-operation, I am sir,

Yours truly,

R. F. LICORISH, M.D.

SOCIETY MEETINGS.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting of this association was held in Hartford, at the Garde Hotel, Tuesday, February 6, 1912. The president being late the meeting was called to order by First Vice-President Dr. Underhill, at 11 a. m. The following members responded to roll call or came in soon after: Drs. Thos. Bland, H. E. Bates, F. F. Bushnell, H. C. Balzer, Chas. H. Beere, Geo. T. Crowley, G. E. Corwin, Jos. M. Curry, Geo. L. Cheney, B. K. Dow, P. F. Finnigan, T. A. Gilyard, L. B. Judson, V. M. Knapp, P. T. Keeley, G. W. Loveland, R. D. Martin, G. H. Parkinson, B. D. Radcliff, W. J. Southey, J. E. Underhill, H. Whitney, C. R. Witte. Honorary member, H. O. Averill.

Visitors—Hon. Abner P. Hayes, Prof. H. W. Conn, A. W. Sutherland, V.S., and John J. Moynahan, B.V. Sc.

Minutes of the previous meeting were read and approved. Several communications were read and laid on the table to be taken up for consideration later in the meeting. Reports of the secretary and the treasurer were read and accepted by vote.

At 12 m. it was voted to adjourn for lunch. Meeting reconvened at 1:30 p. m.

Applications for membership—John Joseph Moynahan, B.V. Sc., V.S., Ontario Veterinary College, 1910; vouchers: Thos. Bland, V.S., and P. F. Finnigan, V.S. A. W. Sutherland, V.S., Ontario Veterinary College, 1908; vouchers: B. D. Radcliff, M.D.C., and Thos. Bland, V.S. Edward R. Dimock, D.V.S., Kansas City Veterinary College; vouchers: B. K. Dow, V. S., and Grove W. Loveland, M.D.C. Applications were referred to the Board of Censors.

Officers elected—President, Dr. J. E. Underhill; first vice-president, Dr. H. Whitney; second vice-president, Dr. G. T. Crowley; secretary, Dr. B. K. Dow; treasurer, Dr. Thos. Bland; board of censors, Drs. G. W. Loveland, W. J. Southey, P. T. Keeley, V. M. Knapp, F. F. Bushnell. Dr. Underhill took the president's chair and made a short address thanking the members

for the honor which they had conferred on him by electing him president; and that he would endeavor to perform the duties of the office to the best of his ability, and would work with the members to advance the interests of the association and elevate the standing of the profession.

Prof. H. W. Conn, director of the laboratories of the State Board of Health, gave a very interesting and instructive address on the complement-fixation test for glanders. He answered many questions and invited the members to visit the laboratory and witness the test. He was given a rising vote of thanks for the address.

Under the head of new business, several letters were read in regard to a bill before Congress to consolidate the veterinary service, United States Army, and to increase its efficiency. As several of the members had already given the matter consideration and had assurance from their members of Congress that they would support the bill, and where no promises of support were received, they stated that they would give the matter careful consideration, it was thought that no special action of the association would be of any assistance at the present time, as the individual members, who were in touch with the situation said they would do everything possible if anything developed where more work could be done.

A letter was read from the manager, Mr. Rasmussen, of Pasteur Laboratories of America soliciting funds for the erection of a monument to the late Prof. S. Arloing. As the letter stated that the A. V. M. A. had donated \$100 some of the members thought that if this association should contribute \$5 to the fund it would be equal in proportion, and about all that it could afford at the present time, though it is a worthy cause and should be assisted as much as possible. It was, therefore, voted to contribute \$5 to the fund.

Hon. Abner P. Hayes, attorney at law, was requested to express an opinion on certain sections of the law regulating the practice of veterinary science in Connecticut, which he did, answering several questions relating to employment of unlicensed men by veterinarians that were registered under the law. The discussion brought out some important points in regard to tuberculin testing of cattle, under the new law, that are brought into the state or tested to go out of the state. Mr. Averill, Commissioner on Domestic Animals, stated that he was very careful in ascertaining who are qualified to make the test, and that he would

not officially approve of an unqualified or dishonest veterinarian's test.

During the discussion of the laws relating to sanitary control work in the state, the matter of charges against Commissioner Averill, for incompetence, misconduct and material neglect of duty in his official conduct, which were pending before the Governor, many of the members felt that their professional reputation had been indirectly attacked, and freely expressed their opinion as to why the charges had been made. As Dr. Whitney, who enjoys the confidence and respect of *every* member of the association, was directly concerned, the following resolutions were presented and unanimously adopted:

Whereas, One Frank G. Atwood has preferred charges against the Commissioner on Domestic Animals, for the State of Connecticut, alleging, among other charges, that the Commissioner of Domestic Animals has been derelict and negligent in the employment of Dr. Harrison Whitney, a member of this association, to investigate certain alleged cases of glanders, and further alleging that the said Dr. Whitney, in the examination of said cases and in the performance of his professional duty, has been negligent in the same and alleging that the said Dr. Whitney, while so employed by the Commissioner on Domestic Animals, failed to exercise proper professional skill and reasonable care and diligence in the investigation and treatment of numerous alleged cases of glanders, and

Whereas, The said Dr. Harrison Whitney is a former president of this association and is known to this association, as a man of high professional skill and attainments as a veterinarian, and a gentleman of unimpeachable integrity, now, therefore, be it

Resolved, By the Connecticut Veterinary Medical Association that this association desires to place on record an expression of its absolute confidence in the professional skill of Dr. Harrison Whitney, a former president of this association, and to further express our complete confidence in his integrity as a man, and in his fidelity to all matters entrusted to his professional skill and care, and be it further

Resolved, That this association deprecates and condemns such attempts as have been made to reflect upon his professional skill and standing or upon his personal integrity and probity, confident that the examination and investigation of said charges will disclose that said charges were made as a result of prejudice or ignorance and without any probable or justifiable cause, and be it further

Resolved, That the secretary be instructed to forward a copy of this resolution to the Commissioner on Domestic Animals.

A bill for flowers for Dr. Kelley's funeral was presented and ordered paid.

It was voted that Drs. Whitney, Loveland and Bland be selected as a committee to draw up resolutions on the death of Dr. James H. Kelley, an ex-president of the association. The following resolutions were later presented by the committee.

Whereas, Divine Providence has called home our professional brother and our personal friend Dr. James H. Kelley, one who was endeared to every member of this association, now, therefore, be it

Resolved, By The Connecticut Veterinary Medical Association:

In the untimely death of our brother Dr. James H. Kelley, stricken down, as he was, in the healthy vigor of a robust and noble manhood, at the very zenith of his physical and mental powers, as a result of his unfaltering devotion to his duty and to the high calling which he had chosen as his profession, his passing brings home to his professional brethren a sense of irreparable loss, and as an expression of its sorrow and as a permanent record for all time to come this association desires to place on record its tribute to his life and memory.

In his social life he was a warm and generous friend. He literally and truly loved his fellow men. His heart ever throbbed with sympathy for the afflicted and distressed. His purse was ever open to relieve those in need and his charity was so broad that of him it might be truly said: "All mankind was his brother." In his social intercourse and companionship with his personal friends and professional associates he was a veritable prince. None knew better than he the subtle art of genuine hospitality.

In his religious life he was not prone to voice his convictions. To him religion was a sacred personal relation between him and his Maker, finding practical expression in the Golden Rule.

In his professional life he was the devoted servant of his avocation. To him the musty tomes of the great veterinary authorities were his intellectual companies and in them he found the workhouse in which his intellectual aspirations reveled. In the treatment of his case he summoned the highest professional skill at his command, and his sympathy and commiseration of the sick, dumb beast was only excelled by his sympathy for man himself. With his professional brothers he was the ideal prac-

tioner, always respectful of the opinions of his associates, ever ready to apply the suggestions of technical skill without the vaunting pride of personal opinion.

Never by word or act did he do aught to harm or injure his fellow practitioners. Of his own skill he was prodigal and no young veterinarian ever sought his advice in vain.

But the fatal and inexorable shaft has stricken him down in the full vigor of a yet strenuous manhood. The human activities in which he had borne so large a part seem incomplete. But as of old in reference to the painter, "What Titian left unfinished Palma reverently completed and dedicated to God." So may our association find, when one of its members leaves his work unfinished another will take it up and dedicate it to God and his fellow men, and be it further

Resolved, That a copy of these resolutions be forwarded to the family of our deceased brother and that they be spread upon the records of this association.

Signed,

H. WHITNEY,

G. W. LOVELAND,

THOS. BLAND,

Committee.

It was voted to elect Hon. Abner P. Hayes an honorary member, in consideration of the many favors which he had freely given to members and to the association in a general way.

After talking over several matters, in an informal way, which concerned the association, it was voted to adjourn until the semi-annual meeting, which should be arranged for by the president after he had time to consider invitations extended by different members to hold the meeting in their city.

B. K. Dow. Secretary.

INDIANA VETERINARY MEDICAL ASSOCIATION.

The sixteenth annual meeting of the above association was held at the Denison House in Indianapolis, January 10, 1912.

Meeting called to order at 9.30 a. m. by the president, Dr. T. M. Sigler. After the address of the president, the minutes of the previous meeting were not read, as a printed report had been published. The report of the secretary, Dr. E. M. Bronson, was read and approved, as was also the report of the treasurer, Dr. J. W. Klotz. Following this, the chairman of the

committees on programme, entertainment and publication made their reports, and all were approved. Following this, was a report of the chairman of the legislative committee, Dr. C. I. Fleming, reviewing the work of the committee in the last session of the legislature and the passage of our present veterinary law, the many obstacles they had to overcome, and some of the concessions they had to make in order to secure the passage of the bill. One of these was the "eight-year" clause; and the consensus of opinion of the association members present was that this will work no hardship on anyone, as most all these men were already practicing, and that the law, while not perfect, was a step forward for the veterinarians of Indiana, and that the veterinarians (graduates) of this State have reason to be proud of the law and of the men who worked so faithfully to secure the passage of it, contributing both time and money. A motion was carried to repay those that were out considerable of their own money after their contributions.

Following the report of the legislative committee, the association proceeded with the regular order of business, the next being the admission of new members. Fifty-one (51) were admitted; this being the "banner year" for us. (Wonder if the coming A. V. M. A. meeting wasn't responsible for most of this?)

Following was the election of officers, which resulted as follows: Dr. W. J. Armour, of Goshen, President; Dr. J. G. Heighway, of Ladoga, Vice-President, and Dr. A. F. Nelson, of Lebanon, Secretary. Board of Censors: Dr. O. L. Boor, of Muncie; S. G. Fehrling, of New Richmond, and E. M. Bronson, of Hartford City.

At the afternoon session, which convened at 1.30 p. m., the following papers were read and discussed:

"Professional Ethics in Veterinary Practice," Dr. D. K. Buzzard, Goshen, Ind. (This was an excellent paper and should have elicited a liberal discussion; but it seemed that the members considered that Dr. Buzzard had covered the ground so thoroughly that there was not much to add.)

"Antiseptics," Dr. A. B. Carter, Covington, Ind. (This was also an excellent paper, but failed to elicit any discussion.)

"Bacterins," Dr. L. C. Kigin, Rushville, Ind. (Dr. Kigin was so familiar with his subject that he needed no notes; but gave an interesting talk, which was followed by a lively discussion.)

"The Efficiency of Hog-Cholera Serum," Dr. R. A. Craig, of Purdue University, LaFayette, Ind. (This was handled by Dr. Craig in his usual masterly manner, and a liberal discussion followed, as this is a subject that is of vital importance to the veterinarians of this State. Dr. Craig's paper made the subject clear to veterinarians that had not had experience in the use of serum, or were not familiar with the methods used in the preparation of serum. He also reviewed in detail the different types of cholera, the lesions that are usually present in the different types, and the method that is followed at the station to keep up the potency of the serum.)

EVENING SESSION.

"Obstruction of the Small Intestines," Dr. H. A. Miller, Paragon, Ind. (This paper created a good discussion, and will no doubt throw much light on some cases that have puzzled many veterinarians, especially those that have failed to hold autopsies.)

"Federal Control of Infectious and Contagious Diseases as it Relates to Transportation, Disinfection of Cars, Yards, etc.," Dr. Fred. Braginton, Indianapolis, Ind. (This paper was not given in time to get it in the printed program, but was a clear, concise report of the work as it is carried out by the B. A. I. and was no doubt a source of valuable information to those present not familiar with the work.)

"Tetanus Antitoxin," Dr. F. H. Brown, Knightstown, Ind. (This paper, of course, elicited a lively discussion; and several interesting stories were told as to the effects—or supposed effects—of large doses of Tetanus Antitoxin, as they had found it in the field.)

"The Jackass, His Peculiarities, Ailments and Treatment," Dr. T. A. Sigler. (This subject was handled by the doctor without notes or gloves, stating that he was like Sis Hopkins in the play. When asked as to whether she knew anything about hogs, she replied, "I ought to, as I was raised with them." The doctor stated that he was raised with the jackass, and that they used them for alarm clocks down on the farm. He discussed the treatment of summer sores and various other ailments that are peculiar to the jackass, and in speaking of the "jack," compared him in some respects to the colored man. Keep him in good spirits, and he will live forever; but when he

gets sick he thinks he is going to die. The doctor stated that literature on the ailments of the "jack" was very scarce, and for that reason he had not much to refer to, in searching for information. He stated that they are particularly susceptible to catarrhal conditions, colds, pneumonia, etc., but that he has had fair success in treating them.)

Following this, the association referred back to the admission of members, and Dr. F. A. Bolser proposed the election of Dr. T. B. Love, of New Albany, Ind., as an honorary member. Drs. Geo. H. Roberts and E. M. Bronson seconded the nomination. The doctor (T. B. Love), while not a graduate, is one that has always been ready with his time and money to help the profession any time there was a call for help.

In placing his name before the association, Dr. Bolser said: "I want to move that the honored guest that sits at the head of the table to-night, who says—and I believe truthfully—that he is the oldest practitioner in the State, be made an honorary member of this body."

Dr. E. M. Bronson said: "I have had this thought in mind for the past several meetings, but other matters have crowded it out until the opportunity had gone by. I am not ashamed, however, to get up and second Dr. Bolser's motion. There is one of the old-school veterinarians, but one who has the respect of every associate practitioner of veterinary medicine around him, and one who has complied with the laws of the State, and one whom it is an honor to have closely associated with us." Motion carried unanimously.

Dr. Love, in replying, said: "Gentlemen, as you have seen fit to take me in with your body, I want to say that I appreciate it with all my heart. I feel that I want to be with the veterinarians. I shall not be here long, but I want to be active while I am here, and I wish to assure you that I will cause no stain on this association while I am connected with it."

Met at 9.30 a. m., January 11, at Indiana Veterinary College, on East Market street, for clinics in charge of Dr. J. W. Klotz. Among the subjects and operations were:

No. 1. Subject Mule—Poll Evil. Operators: Dr. T. A. Sigler and Dr. W. J. Armour. Animal was cast, and restraint used was hobbles. Hemorrhage controlled by actual cautery.

No. 2. Subject Mule—Tumors of Scrotum, Sheath and Prepuce. Operators: Dr. T. M. Hall and Dr. T. A. Sigler. Restraint: cast and hobbles used. Removal of tumors by dis-

section and chemical cauterization of the surrounding tissues.

No. 3. Subject Gray Gelding—Roarer (12 months' standing). Operator: Dr. J. W. Klotz, assisted by several others. General anaesthesia, method used that of Professors Williams and Hobday; removal of mucous membrane of the ventricle by incision through the crico-thyroidean ligament.

No. 4. Subject Gray Gelding. Furnished by Dr. Geo. H. Roberts. Previous history: Brought in some time ago suffering from pleurodynia. The animal soon after developed circulatory trouble. Dr. T. M. Hall and Dr. Chas. Morris were appointed to diagnose the case, which they pronounced a case of myocarditis with valvular complications.

At 12 noon clinics adjourned for luncheon, furnished on the grounds by the college.

Clinics resumed at 1.30 and continued until 3.30, during which time several interesting cases of lameness and operative subjects were disposed of, when the association was again called in session to act on some matters that had been passed over for the time being. Adjournment followed, to meet January 15 and 16, 1913, in the annual session.

This meeting, I believe we can truthfully say, was the greatest in every respect that the association has ever held; in attendance, in the interest shown by each member, in the number of new members and in the spirit manifested by every one, to try and entertain to the best of our ability the AMERICAN VETERINARY MEDICAL ASSOCIATION when they meet with us in August. And we believe that every member went home with the resolution in his mind to assist in every way possible to make the visitors feel that we appreciate their choice of Indianapolis as the place for their *forty-ninth annual meeting*.

As the local committee and place of meeting have already been announced in your columns, I do not presume it necessary to take up your space with that, but will say that Dr. Geo. H. Roberts, as *chairman of the local Committee on Arrangements*, will furnish any information in regard to that. (Do not tell him that I said he would, or he will be hunting up something for me to do.)

Our President (State Association) Dr. W. J. Armour, District National Secretary Dr. J. W. Klotz, Vice-President Dr. J. G. Heighway, or myself will at all times be ready to give any information we can to anyone.

A. F. NELSON, Secretary.

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

With an unprecedented attendance and more than the usual enthusiasm the semi-annual meeting of the Missouri Valley Veterinary Medical Association, at Kansas City, January 30 to February 2, inclusive, was the most fruitful in the history of the organization. Interest centered around the discussion of the so-called cornstalk disease, the production, marketing and use of anti-hog-cholera serum and the demonstrations of the intradermal and ophthalmic tests. Following is the program, which was carried out in full:

Tuesday, January 30, at the Coates House, at 10 a. m.—“Several Cases on the Same Farm,” Dr. J. H. MacCartney, of Joplin, Mo.; “Arecoline Hydrobromide,” Dr. J. Harvey Slater, of Richmond, Mo.; “Choice of Cathartics in Equine Practice,” Dr. H. Jensen, of Kansas City, Mo.; “Colic Cases Which Proved Fatal,” Dr. W. H. Spencer, of Yates Center, Kan.; “Elimination,” Dr. Herbert F. Palmer, of Chicago, Ill.; “The Relation of the Laboratory Man and the Practitioner,” Dr. C. E. Salsbery, of Kansas City, Mo. At the Kansas City Veterinary College, at 8.00 p. m.—Reception by the Kansas City Veterinary College Medical Association.

Wednesday, January 31, at the Coates House, 9.00 a. m.—“The Embryologic Explanation of Some Common Malformations,” Dr. R. F. Bourne, of Kansas City, Mo. (discussed by Dr. A. T. Kinsley, of Kansas City, Mo.); “Forage Poisoning, Prof. Thomas P. Haslam, of Manhattan, Kan. (discussed by Dr. A. T. Kinsley, of Kansas City, Mo., and Dr. J. S. Anderson, of Seward, Neb.); “Cornstalk Disease of the Horse,” Dr. J. C. Humphreys, of Laredo, Mo.; “Report of Cases,” Dr. W. B. Welch, Marshall, Mo.; “Report of Cases,” Dr. H. Bradley, Windsor, Mo. At 7.00 p. m. at the Coates House.—The annual dinner; “Sanitary Inspection of Kitchens and Food Storage in Restaurants and Hotels,” Dr. H. DeLamater, Deputy Health Commissioner of Kansas City; “Weights and Measures in Relation to Sanitary Inspection Service,” Mr. Alban G. Compton, Inspector of Weights and Measures of Kansas City; brief talks were made by Dr. R. C. Moore, of Kansas City; Dr. M. H. Reynolds, of St. Paul, Minn.; Dr. J. C. Robertson, of Chicago, Ill., and Dr. W. H. Dinwiddie, of Fayetteville, Ark.

Thursday, February 1, at the Kansas City Veterinary College,

Clinic at 9.00 a. m.—“Hog Cholera,” Dr. F. W. Hueben, of Kansas City, Kan.; “Demonstrations of Lesions of Hog Cholera and Other Swine Diseases,” Dr. A. T. Kinsley, of Kansas City, Mo. (discussed by Dr. M. H. Reynolds, of St. Paul, Minn.; Dr. A. T. Peters, of Springfield, Ill.; Dr. J. I. Gibson, of Des Moines, Ia., and Dr. J. W. Connaway, of Columbia, Mo.); “Intradermal Tuberculin Testing,” Dr. D. F. Luckey, of Columbia, Mo. (discussed by Dr. L. D. Brown, of Hamilton, Mo.; Dr. G. Ed. Leech, of Winona, Minn.; Dr. H. C. Tuck, of Morrisville, Mo., and Dr. G. C. Babb, of Topeka, Kan.). Lunch was served in the college building at noon to veterinarians and lady visitors. Veterinarians and ladies enjoyed a theatre performance at the Orpheum Theatre at 8.00 p. m.

February 2, at Swift & Co.'s Plant.—Forty head of cattle, which had been given the intradermal test, and fifty-eight head which had been given the ophthalmic test were slaughtered and post-mortem examination made.

The chief paper presented on Wednesday was that of Prof. Thomas P. Haslam, pathologist of the experiment station at Manhattan, Kan., on “Forage Poisoning.” Professor Haslam advanced the theory that the so-called cornstalk disease is caused by a mould, but that the mould became pathogenic only when the foodstuff upon which it appears contained certain chemic substances. Numerous experiments conducted by the Kansas experiment station were offered in support of the theory. Dr. A. T. Kinsley, pathologist of the Kansas City Veterinary College, supported the theory of Professor Haslam, citing the relation of the pneumococcus to pneumonia as analogous. That there was widespread interest in the topic was evident from the fact that the discussion of it extended over the greater part of the day.

In his address at the dinner on Wednesday evening Dr. DeLamater made some flattering references to the work of the veterinarians in his department, and called attention to the fact that none of the cities is willing to pay enough salary to secure the best men in the health departments.

The clinic in the Kansas City Veterinary College amphitheatre on Thursday proved to be highly interesting. Dr. F. W. Hueben's paper on hog cholera, with the subsequent demonstrations of cholera lesions, drew out a comprehensive discussion of serum therapy. Dr. H. M. Reynolds, dean of the veterinary department of the University of Minnesota, presented some very

interesting statistics on serum therapy and urged the collection of a collection of a greater volume of figures on this important field of veterinary practice. Dr. A. T. Peters, bacteriologist of the Livestock Sanitary Board of Illinois, and Dr. J. I. Gibson, State Veterinarian of Iowa, originated a lively debate relative to the control of shipments of cholera virus. It developed the sense of the association to be that State officials should control every drop of cholera virus shipped into or within the State.

The paper on "Intradermal Tuberculin Testing," by Dr. D. F. Lucky, former State Veterinarian of Missouri, which was supplemented by a practical demonstration of methods employed in giving the test by Dr. D. L. Brown, Deputy State Veterinarian of Missouri, proved attractive, in view of the demonstrations then being conducted by the association. Dr. Luckey stated that as State Veterinarian he had employed the intradermal method in several thousand head with 98 per cent. correctness. He directed attention to great saving of time and labor it afforded and to the duration of the reaction.

The following morning ninety-eight head of cattle were slaughtered at Swift & Co.'s plant and autopsies conducted to determine the correctness of the intradermal and ophthalmic tests. The cattle were very kindly purchased by Swift & Co. and turned over to the association for the demonstration. Forty head were given the intradermal test on Tuesday morning. To thirteen head of the forty the subcutaneous test had been previously given. The same animals reacted to both tests and post-mortem examination showed sufficient lesions to make a diagnosis positive of tuberculosis.

Fifty-eight head were given the ophthalmic test on Wednesday afternoon. Thirty-three head of the fifty-eight had previously been subjected to the subcutaneous test. Six head reacted to the ophthalmic test and two of the six had reacted to the subcutaneous test. The two latter showed diagnostic lesions, and all but one of the other four which had reacted to the ophthalmic test showed sufficient lesions for diagnosis. This one was held for careful subsequent inspection, the results of which are not yet known. One of the ocular reactors showed lesions in the liver only and at only one small focus there, which is interesting when considered with reference to the sensitiveness of the test.

The following table shows the results of the test in percentage:

	Subcutaneous.	Intradermal.	Ophthalmic.
Correct positive results.....	3	1	5
Correct negative results.....	40	39	52
Total correct results.....	43	40	57
Percentage correct results.....	93.47	100	98.27
Incorrect positive readings.....	..	..	1
Incorrect negative readings.....	3	..	..
Total incorrect readings...	3	..	1
Percentage incorrect readings.....	6.52	..	1.70
Animals tested	46	40	58

The tests were conducted by the Bureau of Animal Industry, in conjunction with the State officials of Missouri. Dr. J. W. Washburn, assistant pathologist to the Bureau of Animal Industry, had entire charge of the work. He was assisted in the tests by Dr. L. D. Brown, Assistant State Veterinarian of Missouri; and under Dr. Washburn's direction the post-mortem examinations were conducted by Dr. James Fleming, inspector in charge at Kansas City, assisted by his corps of inspectors. Every precaution was taken to safeguard the accuracy of the tests, and the post-mortem examinations were very carefully conducted.

In point of attendance the meeting was the greatest in the history of the Missouri Valley Association, there being present more than two hundred and fifty veterinarians and over four hundred other visitors and students. There was such close attention to the program that the local committee was taxed at times to find seats enough. The debates were lively, and carried enough humor to make them entertaining.

There was a large influx of new members, some thirty-odd being elected during the meeting. Following is a list of the members elected at the meeting:

Several important resolutions were adopted, chief among which were the following:

To indorse the Army Veterinary bill and urge its passage by the present Congress.

To amend the constitution raising the dues to two dollars to cover the publication of the association's proceedings.

To urge a law providing for the inspection of laboratories which produce biologic products.

To amend the constitution that applicants for membership must supply evidence of membership in their respective State

associations and that they are in good standing to be eligible for membership in the Missouri Valley Association.

VETERINARY ASSOCIATION OF MANITOBA.

The annual meeting of the above association was held in the Council Chamber of the City Hall, Brandon, on Tuesday, March 5, at 9 a. m.

The president, Dr. S. A. Coxé, occupied the chair, and the following members were present: S. Robinson, W. E. Martin, W. R. Taylor, J. McDougall, W. H. T. Lee, M. B. Stiver, J. J. Kelliher, M. J. Preston, W. Leslie, J. Mack, W. A. Dunbar, C. D. McGilvray, I. B. Irwin, F. Torrance, H. Bradshaw, W. H. Smith, L. Young and E. M. Coombs.

The reports of the auditors and of the secretary-treasurer and registrar showed that the affairs of the association were progressing satisfactorily in most respects, but that the reserve fund had been seriously depleted by several unusual expenditures during the past three years. Some discussion ensued as to how this state of affairs could best be remedied, and it was finally decided that the annual fee should be raised from two dollars to four dollars.

The election of officers resulted as follows:

President, Dr. W. R. Taylor, Portage-la-Prairie.

Vice-President, Dr. C. D. McGilvray, Winnipeg.

Secretary-Treasurer and Registrar, Dr. F. Torrance, Winnipeg.

Examiners, Drs. W. E. Martin, C. D. McGilvray and F. Torrance.

Members of the Council, in addition to the above—Drs. S. A. Coxé, T. C. Lee and Henry Bradshaw.

It was decided to hold the semi-annual meeting in the city of Winnipeg, in the Agricultural College, during the Midsummer Fair. The annual meeting will also be held during the coming year in Winnipeg.

Dr. Lee brought to the notice of the members a recent experience of his, in which he had accidentally used sulphuric ether, instead of cocaine solution, when injecting a local anaesthetic for the operation of firing. The horse stood the operation much better than is usually found when cocaine is injected. There was absolutely no indication of feeling in the part, and the doc-

tor was surprised to find out that it was not cocaine he had been using.

A paper by Dr. Stanley Martin on "Enterectomy and Anastomosis of the Intestine of the Dog" was, in absence of the essayist, read by Dr. Dunbar.

After some discussion Dr. McGilvray presented an interesting paper upon "Hog Cholera," in which he described outbreaks that he had seen and measures taken to suppress them.

Following this, the members discussed the subject very thoroughly, and some interesting points in connection with the diagnosis of the disease were elicited.

Dr. Martin asked if the essayist considered that the outbreak of disease had any connection with the invasion of rats.

Dr. McGilvray replied that he did not think that rats would have been responsible for the recent outbreak. The fact that there were no rats known to be at Kenora, where there was an outbreak, renders this theory entirely untenable.

Dr. Coxe asked if there was any one diagnostic symptom that could be depended upon—any lesion that was always present? And he also suggested that it might be well if the Department of Agriculture would notify the practitioners of any outbreaks of disease.

Dr. McGilvray replied that as a servant of the Department he was obliged to carry out the policy that was imposed by those above, and although he might feel disposed to give information that was possible, still he had to recognize the fact that publicity was not always desirable. The livestock industry might easily be affected by rumors originating from information carelessly given out. As regards diagnostic symptoms, he said that no one lesion could be depended upon, with the exception of the characteristic ulceration of the bowels, but, unfortunately, this condition is not seen except in chronic cases. The speckled color of the kidneys is also an indication, but he considered the appearance of the lymphatic glands more characteristic than this. These were swollen and dark red and had been likened to "strawberries with pimples on them." Ulceration of the bowels is usually found about the ileo-caecal valve, and the observer must not be confused by the appearance of the group of glands surrounding this part. Diagnosis is difficult in many cases; sometimes it is necessary to quarantine for a time before a diagnosis can be reached.

Dr. Dunbar said that he had listened with great interest to

the remarks that had been made and congratulated the essayist upon the excellence of the paper which he had presented to the meeting. He had seen the first outbreak of hog cholera in Manitoba, 26 years ago. He was then acting for the Dominion Government. The outbreak occurred in a piggery in Kildonan, where the owner had 350 hogs kept under the most filthy conditions imaginable. The food on which these animals subsisted was of the most horrible kind that can be imagined, even night-soil being included. The owner was unwilling to do anything, and the outbreak finally resulted in his losing all of his pigs but fifty. Ulceration of the bowels was the chief lesion. This was a very important question to Manitoba, and veterinarians cannot be too well informed thereon. He had much pleasure in moving a vote of thanks to Dr. McGilvray.

Dr. Martin seconded the motion and asked whether the Department advocated the use of serum.

Dr. McGilvray replied that the Department does not advise the use of serum. This is a matter of policy—the slaughter of hog cholera cases was decided upon as the best policy for Canada, as the outbreaks were not widespread and were confined to certain limits. Serum is used largely in the United States as a palliative and preventative measure.

Dr. I. B. Irwin of Stonewall reported an interesting case regarding a cow which developed at intervals a very peculiar chain of symptoms, indicating some peculiar condition affecting the central nervous system. During attacks the animal would walk around in a circle, and in the intervals between the attacks appeared to be perfectly normal. The cow made a recovery.

In the discussion which ensued, the members present suggested various possible causes. Dr. Coxe was of the opinion that it might have been a case of strychnine poisoning. Dr. Martin suggested that it might have been caused by indigestion, the symptoms developing from toxins produced by decomposing ingesta.

Dr. Leslie had seen a similar case in a horse. Poisoned wheat had been distributed round a field for poisoning gophers, and the horse had eaten some of this. This horse had spasms every hour for about twelve hours and finally died.

Dr. Lee had seen a similar case in a cow, but in this case it was strychnine poisoning. Spasms occurred about an hour apart and the cow finally recovered.

Dr. Torrance congratulated the essayist upon the way in

which he had presented the paper. He considered that as a literary production it was one of great excellence. He thought that one of the symptoms presented by the cow could hardly be explained on the grounds of strychnine poisoning, that was the circular movements of the cow. As a rule, strychnine poisoning did not produce this circular progression. He had much pleasure in moving a vote of thanks to Dr. Irwin, which was seconded by Dr. Coxe and carried.

Dr. Coxe introduced the question of the desirability of sewing accidental wounds. In his opinion a wound must be a bad one and in a bad place, or he would not sew it up. He finds that wounds do better if not stitched. Dr. Martin was of the opinion that the average wound would do as well unstitched as stitched, but there are many wounds that require stitching. The owner in most cases imagines the veterinarian is not doing his duty if he does not stitch the wound. If we don't do it someone else will, and in many cases the wound is stitched for the reason that the owner expects it to be done. Stitches retain secretions and in many cases do more harm than good.

Dr. Dunbar thought that wounds did as well without stitches, horizontal wounds especially are much better without stitches. Stitches however are often necessary, and owners are hard to persuade of the uselessness of stitches.

Dr. Coxe did not allow the owner to dictate to him how a case was to be treated. If he thought a wound was better without stitches it didn't matter what the owner said he wouldn't stitch it. He considered in most cases stitches were unnecessary.

Dr. Leslie related an experience in which he used hair pulled out of the mane in order to stitch a wound, to which he had been called and discovered that he had no suture material. The wound did remarkably well, but three weeks later the owner wanted to know why gray scars had marked out the place of each stitch!

Dr. McGilvray was of the opinion that the best time to stitch was not immediately after the infliction of the wound, but from 12 to 24 hours later.

The following resolutions were adopted:

"Whereas, The Veterinary Association of Manitoba has learned with regret of the resignation of Dr. Rutherford from the position of Veterinary Director General and Livestock Commissioner of Canada, be it

“Resolved, That this meeting place on record its appreciation of the great services that Dr. Rutherford has rendered to Canada in the departments over which he has presided and also to the veterinary profession.

“Copy of this resolution to be sent to him and also to the Minister of Agriculture.”

“Resolved, That this Association tender a very hearty vote of thanks to the Mayor and City Council of the City of Brandon for their courtesy in allowing the use of the Council Chamber for this meeting.”

Drs. Woods and Little were appointed auditors for the ensuing year. In the evening a very enjoyable banquet was held in the Hotel Cecil, Mayor Fleming presiding. A large number of members and friends were present and enjoyed a very pleasant evening, enlivened by vocal music and speeches. The meeting then adjourned.

F. TORRANCE,
Sec.-Treasurer and Registrar.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The first session of the annual meeting, scheduled for the 5th and 6th days of March, was called to order by President F. H. Schneider at 10 a. m. Tuesday morning, March 5, 1912, in the Veterinary School of the University of Pennsylvania, Pa.

At the close of the second day it was estimated that there was an average attendance of approximately 125 veterinarians. The sessions of each day were interrupted only for a short time at the noon-hour to partake of the luncheon provided for by the local committee of arrangements and the veterinarians in and about Philadelphia. The local committee of arrangements included members of the State Association: L. A. Klein (chairman), D. B. Fitzpatrick, W. J. Lentz, H. C. Campbell, H. D. Martien; members of the Keystone Veterinary Medical Association: Thos. Kelly (chairman), A. W. Ormiston, H. B. Cox, W. G. Parker, Cheston M. Hoskins.

The program proved itself evenly balanced and easy to follow according to schedule:

Tuesday, March 5, 1912.

Roll call; reading of minutes; President's address; report of delegates to Veterinary Medical Associations; new members proposed; Treasurer's report.

Report of Committee on Intelligence and Education; L. A. Klein, chairman.

"The Pennsylvania State Board of Veterinary Medical Examiners—Its Work and Needs," J. C. Helmer, Scranton.

Collection of dues.

"Operation for Roaring," with demonstration, J.W. Adams, Philadelphia.

"Milk Hygiene Regulations," C. J. Marshall, Philadelphia.

"An Unusual Cause of Udder Disease in Dairy Cows," L. A. Klein, Philadelphia.

Report of Committee on "Milk Inspection," J. C. Helmer, chairman, Scranton.

Discussion of report and papers on "Milk and Dairy Inspection."

Report of Committee on "Animal Husbandry," C. W. Gay, chairman, Philadelphia.

Report of Committee on "Army Legislation," W. H. Hoskins, chairman, Philadelphia.

Wednesday, March 6, 1912.

Report of Committee on "Sanitary Science and Police," C. J. Marshall, chairman, Philadelphia.

"Control of Contagious Diseases of Livestock," R. M. Staley, Harrisburg.

"Modern Diagnosis of Several Infectious Diseases," K. F. Meyer, Philadelphia.

"Some Experimental Work with Animals," H. H. Haver, State College.

Secretary's report, communications and correspondence; report of Board of Trustees, C. J. Marshall, chairman, Philadelphia; nomination and election of officers; balloting and introduction of new members.

"Paper-Bob Veal," P. A. Fish, Ithaca, N. Y.

"Lymph Glands of Animals and the Practical Method of Exposing Same for Examination," Thomas Castor, Philadelphia.

"Municipal Meat Inspection," T. E. Munce, Harrisburg.

"Culacaemia," S. E. Weber, Lancaster.

New business; unfinished business; seating of new officers; adjournment.

The nomination and election of officers resulted in the following choice: A. W. Wier (Greenville), President; E. W. Powell (Bryn Mawr), Thomas Kelly (Philadelphia), D. A. Gorman (Kittanning), Vice-Presidents; Francis Bridge (Philadelphia), Treasurer; E. H. Yunker (Philadelphia), Recording Secretary; John Reichel (Glenolden), Corresponding Secretary; Board of Censors: C. J. Marshall (Philadelphia), F. H. Schneider (Philadelphia), C. W. Springer (Uniontown), W. H. Hoskins (Philadelphia) and L. A. Klein (Philadelphia).

The following were elected to active membership: E. M. Curley (Pottsville), W. G. Kimball (Philadelphia), Ira G. Goble (Bath), Irvin S. Reifsnyder (Collegeville), H. H. Haver (State College), Geo. T. Van Buskirk (Willow Grove), Cheston M. Hoskins (Philadelphia), Harry F. Leighton (Glenolden, Pa.), N. C. Bennett (Laceyville), David McKibbin (Philadelphia), J. W. Mather (Berwick), Ernest C. Deubler (Media), D. N. Rivers (Lansdale), Harris S. Borneman (Morristown, Pa.), G. K. Swank (East Mauch Chunk) and G. H. Welliver (Bloomsburg).

The place of meeting of the September semi-annual meeting was not decided upon.

JOHN REICHEL, Secretary.

KENTUCKY VETERINARY MEDICAL ASSOCIATION.

The above association held a meeting at the New Frankfort Hotel, Frankfort, Ky., February 28 and 29, 1912, and the following program was carried out: "Glanders and Mallein," Dr. S. F. Musselman; discussion by Dr. George W. Pedigo. "Serum Preventive Treatment for Catarrhal Fever in Horses," Dr. John T. Shannon. "Bacteriology of Infectious Abortion in Livestock," Prof. E. S. Good; practical discussion by Dr. E. R. Mumma. "Septicæmia," Dr. John C. Meyers; discussion by Dr. J. W. Jameson. "Eradication of Scabies in Kentucky," Dr. A. J. Payne, B.A.I. "Pernicious Anæmia," Dr. R. P. Moody. "Arecoline," Dr. O. S. Crissler; discussion opened by Dr. L. M.

Land. "Serum, Vaccines and Bacterines Used in Veterinary Practice," Dr. C. A. Miller; discussion by Dr. J. K. Ditto. "Eradication of Tuberculosis," Dr. F. T. Eisenman. "Azatoria," Dr. W. B. Robinson; discussion by Dr. John T. Haggard. "The New Corn Disease," Dr. M. A. Purdy; discussion by Dr. H. L. Casey.

A bill had been introduced in the Legislature which brought the veterinarians of the State to Frankfort on this day to work for its passage and to attend the State Association. There were numerous veterinarians in Frankfort, but the actual attendance at the meeting was not so large, in that the members were scattered between the meeting and the Capitol. The following graduate men placed their applications and were admitted to membership: Dr. John W. Rollins, Lexington; Dr. C. D. Seay, Frankfort; Dr. C. H. Mainhart, Richmond; Dr. C. Cann, 1046 East Main street, Louisville; Dr. H. F. Cook, Harrodsburg; Dr. James H. O'Donnell, Frankfort, and Dr. G. W. Brashear, Winchester.

The Army Veterinary bill was brought up, but owing to the press of time and other business it was put in the hands of the Executive Committee to draft resolutions and place a copy in the hands of the Representatives and Congressmen from this State.

The question of interest to the meeting was the veterinary bill which restricts the practice of veterinary medicine and is now before the Legislature. The association desires it to pass. It provides for a board of examiners and makes it necessary for every graduate in the State to pass the examination in order to secure a State license to practice in Kentucky. The non-graduates may receive a license if they have been engaged for the past five years in the practice of veterinary medicine, upon application to the board of examiners, with two affidavits from their county certifying that the applicant is of good moral character, etc.

This bill is not radical, but was written on a very broad scope, that it might pass beyond a doubt, and at some later date be amended. A banquet was held on the evening of the 28th in the private dining room of the New Frankfort Hotel, where about forty were seated around the table. The following members of the Legislature, Messrs. Douglass, Nichols, Dave Halley; Senators Berkshire, Mark Ryan, Jack Knight, Thurman, Mahin, Palmer, and Mr. Grubbe, representative of the LaFayette Pharmaceutical Company, attended, and gave encouraging statements, pledging themselves to do everything possible to make the bill regulating the veterinary practice in Kentucky a law.

At the close of the meeting it was decided to keep one or two veterinarians at Frankfort for the remainder of the present session of the Legislature. In the near future we hope to report the passage of this bill.

ROBERT GRAHAM, Secretary.

NORTH DAKOTA VETERINARY ASSOCIATION.

The tenth annual meeting of the above association convened at the Veterinary Building of the Agricultural College, Fargo, at 10 a. m., January 16, 1912.

The morning session was occupied in listening to committee reports. President D. Fisher in the chair.

The afternoon session was devoted to papers and discussions, Dr. W. F. Crewe, State Veterinarian, leading with his subject as "A Few Pointers on Inspection of Livestock for Interstate Shipment." Dr. E. Schneider followed with "Several Case Reports." "The Veterinarian's Interest in Higher Education," Dr. E. D. Harris of the Agricultural College faculty. "A Single Surgical Operation for Teat Fistulae in the Cows," Dr. F. H. Farmer. "Case Reports," Dr. J. H. Robinson. "Immunity and Immunity Reactions," Dr. L. Van Es, Dean of the Veterinary Department of the North Dakota Agricultural College. "Arecoline," Dr. D. Fisher. "Case Reports," Dr. B. C. Taylor. An informal report on "Some Non-Anaemic Field Cases of Swamp Fever," Dr. A. F. Schalk of the Agricultural College. "Equine Tuberculosis," Dr. R. E. Shigley.

Eleven new members were elected at this meeting.

On Tuesday evening, January 16, the association enjoyed a sumptuous banquet at the commercial club rooms. Following the banquet, the president opened the "Question Box," and while blowing fragrant rings of Havana cigar smoke, many hard knots of our daily practice were successfully "cracked." On Wednesday forenoon occurred the annual election of officers with the following result:

President, E. J. Walsh, Minot.

Vice-President, C. H. Martin, Valley City.

Secretary, C. H. Babcock, New Rockford.

Treasurer, B. C. Taylor, Hillsboro.

It was decided to hold the next meeting some time in mid-summer of 1912, preferably during the State Fair at Fargo.

It is hoped by the Institute Committee that some noted member of our profession can be secured for the institute feature of the next meeting.

C. H. BABCOCK, Secretary.

COMMITTEE ON 1913 MEETING, A. V. M. A.

The Committee on the 1913 meeting of the A. V. M. A. met at Reisenweber's, 58th street and the Circle, New York City, at 7.30 p. m., January 17, 1912. Members present: Winchester, Hoskins, Gill, Berns, Ackerman and Ellis. Absent: A. Liautard, W. L. Williams, James L. Robertson, W. Reid Blair and W. J. Coates.

Acting Chairman Dr. J. F. Winchester presided. Communication from Dr. W. L. Williams was read. Secretary Hoskins went over the plans that had been outlined at the previous meeting of the committee.

The need of dividing up into a series of committees was considered, and in order to promote the work in this direction it was decided to ask President Brenton to make the following additional appointments: Drs. C. E. Clayton, D. W. Cochran, T. E. Smith, R. H. Kingston, J. B. Hopper, Thomas Bland, W. G. Hollingworth and J. E. Ryder.

It was decided to recommend that no surgical clinics be held in conjunction with the fiftieth anniversary; that the subjects considered be major ones of general interest and importance to the profession as a whole; that all papers be confined to twenty minutes' reading, with only an added ten minutes by unanimous consent; that the morning sessions of the convention be given up to papers on general subjects and reports of standing and special committees; that the afternoons be given up to sectional work and that the vice-presidents be charged with looking after these sections and preside at the same to facilitate the work of the meeting; that each morning session be opened by a twenty-minute address on some special subject and by some prominent member of the veterinary or medical profession, or from the field of scientific agriculture, State sanitary control work and allied subjects; and that the banquet be made the opportunity of

inviting some five prominent speakers in our own country or Canada to address us on some specially selected topic allied with our work.

The following tentative committees were agreed upon, subject to revision when the President decides for or against the requested additional appointments:

Finance Committee—George H. Berns (chairman), D. W. Cochran, W. J. Coates, H. D. Gill, E. B. Ackerman, W. G. Hollingworth, T. E. Smith.

Hall and Headquarters—H. D. Gill (chairman), J. E. Ryder, C. E. Clayton, James L. Robertson and W. Horace Hoskins.

Entertainment and Banquet—Robert W. Ellis (chairman), W. Reid Blair, J. B. Hopper, C. E. Clayton, R. H. Kingston, J. E. Ryder, W. L. Williams and W. Horace Hoskins.

Invitations and Publicity—J. F. Winchester (chairman), W. Reid Blair, Robert W. Ellis, W. Horace Hoskins and William Dougherty.

Associate Committee to Ladies' Auxiliary—H. D. Gill (chairman), W. B. Ackerman and T. E. Smith.

Invited guests considered to speak at banquet were as follows: Prof. A. Liautard, Paris, France, A. V. M. A.; Senator W. A. Edwards, Canada; Ex-Governor W. D. Hoard, Wisconsin; Health Commissioner Evans, Chicago, and Secretary of Agriculture James Wilson. Subject to change and final decision.

W. HORACE HOSKINS, Secretary.

YORK COUNTY VETERINARY MEDICAL SOCIETY.

The above society held its annual meeting in the National Hotel parlors, York, on March 12, 1912. It proved a very enjoyable and profitable session.

Enthusiastic and interested discussions were had on tetanus and the use of anti-tetanic serums, azoturia, polybacterins and their use in open joints and fistulous withers, contagious abortion in animals and its treatment, hog cholera and its treatment. Election of officers resulted as follows: President, W. L. Herbert, York; first vice-president, F. M. Kain, York; second vice-president, J. D. Smith, Dallastown; secretary, E. S. Bausticker, York; treasurer, Charles Lenhart, York.

E. S. BAUSTICKER, Secretary.

NEWS AND ITEMS.

Dr. A. F. NELSON, secretary of the Indiana Veterinary Medical Association, states that their sixteenth annual meeting at Indianapolis in January was the greatest in every respect that the association has ever held. Secretary Nelson's report of this great meeting is published on page 110 of this issue and makes good and instructive reading. They are looking forward with a hearty welcome in their hearts to the coming of the A. V. M. A. in August.

WE have received the published proceedings of the Fifteenth Annual Meeting of the United States Live Stock Sanitary Association, held at Chicago in December last (described by Secretary Ferguson as "by far the largest, best attended and most interesting of all meetings to date"), but aside from commenting for a second time on its value to any one interested in live stock in *any* capacity, whom we would urge to procure a copy, we will not discuss it, as Professor Liautard will no doubt have something to say about it in our next issue.

A SPLENDED meeting of the Pennsylvania State Veterinary Medical Association was held at the veterinary school, Philadelphia, March 5 and 6, as reported by Secretary Reichel on page 123, this issue. The papers were presented in "Leonard Pearson Hall," and a very tasty buffet luncheon was served in the "Forge Room" adjoining at noon each day. A very interesting lecture on the Williams' Operation for Roaring was given by Professor Adams in the "Amphitheatre" after luncheon on the first day. Professor Adams also demonstrated the operation, with modifications by himself, on the larynx of a horse that had been destroyed; the same having been a victim of the malady.

ON February 22, 1912, the Gamma Chapter of the Alpha Psi Fraternity held their annual banquet at the Lexington Hotel in Chicago. The occasion turned out to be the largest gathering of Alpha Psi men that ever assembled; about eighty being present, the number being made up of acting, graduate and honorary members, and four invited guests. The latter were: Drs. Joseph Hughes and A. H. Baker, of the Faculty of the Chicago Veterinary College; Dr. A. M. Jansen, of Columbus, Ohio, treasurer of the National Council, and Dr. H. Preston Hoskins, of St. Paul, Minn., secretary of the National Council. Mr. Ira Dodson, of the senior class, acted as toastmaster in an able manner. The praise received by the officers and committee for the success of the banquet was well earned.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Week Aug. 26, '12	Indianapolis..	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médéciale Veterinaire Fran- çaise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha..	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	June, 1912.....	Ft. Collins....	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21-22, 1911.	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	Oct. 10-12, 1911..	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	July, 1912... ..	Springfield ...	L. A. Merillat, Chicago.
Indiana Veterinary Association...	Jan. 15-16, 1913..	Indianapolis..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	.....	.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n....	January, 1913...	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	January, 1912...	Portland.....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young's Bost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n....	Jan. 10-12, 1912..	St. Paul.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n .....	.....	.....	D. L. Luckey,
Montana State V. M. A.....	Jan. 29-30, 1912.	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912....	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	September, 1912.	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 1912	Raleigh.....	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	Fargo.....	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.....	Feb. and Nov...	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	September, 1912.	.....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	Dec. 20, 1911....	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia..	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.....	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18-19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n .....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	M. Page Smith, Wash., D. C.
Vet. Med. Ass'n of N. J.....	July, 1912.....	Jersey City...	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	E. L. Loblein, New Brunswick.
Veterinary Practitioners' Club...	Monthly.....	Jersey City ...	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n.....	.....	.....	A. F. Mount, Jersey City.
Washington State Col. V. M. A..	1st & 3d Fri. Eve.	Pullman.....	W. G. Chrisman, Raleigh.
Washington State V. M. A.....	Jan. 9-10, 1913...	Wenatchee....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Carl Cozier, Bellingham
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville....	Benjamin Gunner, Sewickley.
York Co. (Pa.) V. M. A.....	June 4, 1912.....	York.....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

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*Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. **Make all checks or P. O. orders payable to American Veterinary Review.***

THE MAX WOCHER & SON Co.'s latest set of instruments for roaring are those used by the author of "The Cause and Relief of Dyspnoea, etc.," on page 57 of this issue of the REVIEW. They are also fully illustrated in their full-page advertisement on page 11 (adv. dept.), this issue.

This is the season of the year, as the roads get better, that teamsters begin to smooth up their horses' legs after the strains of winter hauling. Every veterinarian knows the value of iodine, and all *should* know of *Iodine-Petrogen*, which is iodine incorporated in a proper vehicle for application, by JOHN WYETH & BROTHER, INC. See their advertisement on page 22 and write them for literature, mentioning the REVIEW.

The PASTEUR LABORATORIES of AMERICA, who are the sole concessionaires of the original and only genuine Pasteur's Anthrax Vaccine, discovered by Profs. Pasteur, Chamberland and Roux, also have a Polyvalent Calf Dysentery Serum, which has been used successfully by Profs. Alexander and Hadley of the Wisconsin Agricultural College; also by Dr. H. L. Sommer, of Philadelphia, Pa. Latest advices tell us that they have just received a shipment of the germ-free extract referred to by Sommer at the foot of page 631, February number, AMERICAN VETERINARY REVIEW. This house, whose advertisement will be found on page 26 (adv. dept.), supply their products to the veterinary profession exclusively.

AMERICAN VETERINARY REVIEW.

MAY, 1912.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, March 15, 1912.

ARMY VETERINARIANS' SUBJECTS.—In the pages of the REVIEW, number of April, 1911, Dr. J. P. Turner, chairman, stated, under the heading of "Bill Is Now a Law," that at last army veterinarians in the United States Cavalry have made an immense step forward in getting nearer the coveted position of commissioned officers.

One month later the news was communicated that at a meeting of Army Veterinarians Le Nay, Schwartzkopf, Gloss and others it had been decided to draft a new bill, which was no doubt the natural consequence of the first, strengthen its value and, besides, would have for result, if voted, the ultimate formation of a veterinary corps similar to the one which exists in the principal armies all over the world and which, so far, did not exist in the American army.

Drafted with a great deal of care, with most professional military spirit, by one of those gentlemen, but indorsed unanimously by everyone, the new bill provides for the appointment of assistant veterinarians under special requirements, with rank allowance, and so forth, of second lieutenant, who will be promoted after three years as "veterinarian" first lieutenant, after fifteen

years as captain, and from all the captains one shall be selected as chief, as major. This bill was published in the REVIEW, and, of course, found also its proper place in the proceedings of the forty-eighth meeting of the American Veterinary Medical Association.

To complete the value of the arguments presented in the newly drafted bill, it is wisely stated, as, indeed, it is in the *Semaine Veterinaire* here, that a general reorganization imposes itself: "England has reorganized her military veterinary corps and given her a technic chief. Russia and Japan have done the same, and even in Germany the military veterinary departments have been undergoing reorganization, and France is also revising her present army laws." With the results that now every large army has a corps of veterinary officers which varies in number of members with the size of the army itself.

According to the report of the Committee on Army Legislation, this corps of veterinarians numbers 143 officers in the English army, 565 in Germany and 467 in the French. These two last figures, however, must be modified. Indeed, in Germany the entire veterinary staff, including that of Prussia, Bavaria, Saxony and Wurtemberg, counts 686 veterinary officers, and when the new proposed law now before the French government has passed these will count 515 officers.

* * *

Continuing the perusal of the reading of the good work undertaken by the Committee on Army Legislation, the hierarchy in which the promotion of these various officers takes place, and how before reaching the top of the ladder each army officer has to gradually pass from a low rank to a higher—from that of assistant (aide) veterinarian, second lieutenant, to that of first lieutenant, of captain, of major, of lieutenant-colonel, of colonel, or principal, and finally of general—all is well presented.

It resorts from the reading of the consideration of the part that treats comparatively of the foreign army veterinary services that three countries make a special requirement for the nominat-

ing of their army veterinarians, and that is that before being admitted as an army veterinarian special requirements are demanded and special instruction necessary. England takes hers from the Veterinary Military School of Aldershot, Germany from her Veterinary Military Academy of Berlin, and France selects them after a special course of instruction at the Military Cavalry School of Saumur.

I may be here allowed a few lines on Saumur, and I do this not because of the subject in consideration, but from the fact that it is open to every future veterinary officer of the world. I hear that many officers from the American army have been following the various courses of studies given at that world-wide-known institution and that, indeed, every year numerous officers from the armies of the United States, Spain, Roumania, Sweden, etc., have been counted mixed among the French officers of the school.

The School of Application of the Veterinary Service is a department of the School of Cavalry; the fourteen or fifteen hundred horses which are there in service form a precious and useful material of instruction for the young veterinarians that began his professional military life there.

The curriculum includes, with equitation and military regulations, lectures of military legislation, external forms of the horse, hygiene, on the various breeds of horses, a course of clinical instruction. Military pathology and epizootics, horseshoeing, meat inspection, ophthalmology, microbiology, metropolitan and colonial topography, etc. The course lasts ten months.

The faculty attached to the Veterinary School of Application is composed at present of Veterinary Major G. Jolly, director, professor of hygiene, and of four other army veterinarians, all of whom are appointed by the Secretary of War.

The number of the probationary veterinarians (*aides vétérinaires stagiaires*) varies between 25 and 40, according to the demand. Their pay is a little lower than that of second lieutenant. They are submitted to strict military discipline. Their uniform is similar to that of the second veterinary lieutenant. To be admitted as *aides vétérinaires stagiaires* at Saumur, the candidate

graduate of one of the French schools has to submit himself to an oral, a written and two practical examinations, besides the production of specific documents about his general civil condition and aptitude. The examinations are quite difficult and complicated, judging by the programme which is before me, but, of course, the questions are put to men who are recent graduates, and, therefore, the answers must be comparatively easy to give.

* * *

To complete these remarks on Saumur, I have asked Veterinary Colonel Jacoulet, the president of the Société Centrale and late chief veterinarian of the French army, and also Colonel Barrier, his successor, some information on the recruiting and the organization of the veterinary corps in France.

Here they are résuméd: Military veterinarians are recruited by competition among the young graduates from the French veterinary schools.

Admitted after their examination and received as probationary veterinarians, they enter Saumur only after serving one year as private in a cavalry regiment, after which they come to the School of Cavalry and stay eleven months. They do not live in the school.

At the expiration of their time at Saumur, they are obliged to give one month more in Paris to be initiated to the work of meat inspection.

After that they are sent in regiments as assistant veterinary (aides vétérinaires) or sub-lieutenants.

After *two complete years*, day for day, they are promoted second veterinarians, assimilated to the rank of lieutenant.

The rank of first veterinarian, assimilated to the rank of captain, is obtained one-third by selection and two-thirds according to the seniority, after nine or ten years of duty in the preceding rank. That of major veterinarian is given to half by selection and one-half by seniority. It is obtained only after eight or ten years of duty as first veterinarian.

The principal veterinarian of second class, assimilated to the

rank of lieutenant-colonel, is given exclusively by selection of the War Ministry and is obtained only after five or six years of veterinary majorship.

The principal veterinarian of first class, assimilated to the rank of colonel, is given only by selection after two years at least in the inferior rank.

The highest rank in this organization is that of veterinary inspector of the entire service, with rank of general.

Therefore, counting six years to get the rank of aide vétérinaire or sub-lieutenant, two more for that of second veterinary lieutenant, from nine to ten more for that of first or captain, from eight to ten more before getting to be major, from five to six to become lieutenant-colonel or first-class veterinarian, it will make a total of thirty-two years before one can be candidate for the generalship or veterinary inspector.

* * *

I hope this long consideration may be of some interest and that our good friends in the army may find in it the object that I had in view, viz., to join my voice to those of the many who have already spoken in favor of improvements for the position of the army veterinarian in the United States. If from the remarks that I have laid in the above lines something of advantage can be gathered, my principal object will be realized. It is certain that with the limited number of veterinarians in the American army the hierarchy of the various ranks may not be as wide as the one we have considered. But I may, while making apologies for the possible unnecessary details I have gone through, ask why not do with West Point what is done in the military schools of England, France and Germany? Any way is good to elevate the standing of the veterinarian, and perhaps that would.*

* For a great part of the information contained in the above, I am indebted to the kindness of three Veterinary Officers here—Colonel Jacoulet, Colonel Barrier and Veterinary-Major Jolly—I am pleased to thank them for their willingness in obtaining for me the facts relating to Saumur and the recruiting of the Veterinary Service in the French Army.

THE TRACHEAL INSUFFLATION OF MELTZER.—If, in a curarized dog, whose trachea is open, a tube is introduced in the respiratory tract as far as the tracheal bifurcation, and if through this tube is made to pass a continuous current of air under a given pressure, the heart keeps on beating regularly and the animal remains alive during several hours, without, however, making the slightest respiratory motion. To succeed all that is necessary is that the tube reaches nearly to the tracheal bifurcation and that its size should be smaller, half or two-thirds that of the trachea, so as to allow the easy return of the insufflated air.

If, continues Mr. Lenormant, in the *Presse Medicale*, the animal is not curarized, the tracheal insufflation leaves the respiratory movements to continue, but renders them slower (6 to 8 minutes with a pressure of 12 mm. Hg.) ; with a higher pressure (20 to 25 mm. Hg.) apnea takes place and the cardiac beatings are slower, but still regular. Therefore, thanks to the continued insufflation of air in the trachea, gaseous exchanges in the lungs take place as in normal respiration and hematoses is perfect, and thus is realized a true artificial respiration, without active or passive respiratory movements of the thorax, without change in the size of the lungs. And this artificial respiration is not interfered with by the free opening of the thorax; both pleura can be freely incised, a large portion of the thoracic walls can be resected without collapse of the lungs, without any trouble occurring; the lungs remain immobile, in a state of middle distension, and conserve their normal, rosy coloration.

* * *

These facts were established by two American physiologists, Aner and Meltzer, in 1909. From them interesting practical deductions were made and upon them were established new methods of narcosis and of artificial respiration. If the air, insufflated in the trachea carries anesthetic vapors, such as after passing in a bottle of ether, a regular and easy anesthesia will rapidly follow.

The method was first applied in experimental surgery. Meltzer himself, then Elsberg and Neuhof used it with success in several hundreds of animals. It is by it that Carrel was enabled

to perform his experiments of suture and graftings of the thoracic aorta. Unger and Bettmann in Germany, Giordano, Delorini and Donati in Italy, also resorted to it for their experiments on the heart, the aorta or the œsophagus. All those numerous applications have permitted to perfect the technic of the operation and to appreciate the value of a method which has constantly proved itself harmless and efficacious, gradually to find its way in human surgery, where it was resorted to for the first time in 1910 by Drs. Lilienthal and Elsberg, of the Mount Sinai Hospital, in New York.*

Among the principal indications for the application of Meltzer's method is one of mode of administration of anesthetics. It is the one which is most looked for. It was first used in animals by Meltzer, who pointed out the numerous advantages that it offered—quick, deep and regular narcosis, without period of primary excitement, and obtained with a relatively small quantity of anesthetic. The existence of a continuous current of escape prevents the accumulation of anesthetic vapors in the respiratory conducts, hence no overdosing and impossibility of serious accidents of narcosis; hence, also, a rapid waking up, which can be readily activated by insufflation of pure air. Indeed, Meltzer has never killed his animals of experiments, no matter how great was the quantity of ether insufflated, and, more than that, he has succeeded in bringing back to life, with insufflation of pure air and oxygen, animals etherized by ordinary methods and in a state of apparent death since fifteen and twenty minutes.

The method presents other important advantages, but the one spoken of above is the one which would prove of greater use in veterinary surgery.

* * *

ALCOHOLIC COMPRESSES.—Taken from a German publication, the *Annales de Médecine Vétérinaire*, of Brussels, have recorded the conclusions of the observations made by Gehne on the

* See Annals of Surgery, July, 1910, and December, 1911.

use of compresses of alcohol and their effects in veterinary pathology.

The local effects of those compresses are very well marked, characterized as they are by an energetic, active congestion, with abundant serous transudation and an increase in the vitality of the cells. From those effects numerous indications in veterinary medicine are presented in the conclusions :

1. Alcoholic compresses generally give as good results in veterinary as in human medicine.
2. They have a specific action against phlegmons which, if treated at once, are always resorbed, and when the inflammatory process is fatally followed by necrosis, alcoholic compresses accelerate the suppurative progress, localize the gangrene and promote the secretion of a liquid pus.
3. With cutaneous necrosis, the alcoholic local treatment hastens the formation of an isolating furrow and the sloughing of the necrosed part ; at the same time it stimulates the cicatrization, which is more rapid.
4. These compresses are very efficacious in diseases of the withers, the inflammatory phenomena of the beginning being quickly reduced and sometimes radically arrested, and if necrosis sets in, the slough and the cicatrization take place more rapidly.
5. With aseptic inflammation (peritonitis, acute arthritis, fractures, tendonitis and tendinous synovitis) the application of alcoholic compresses is not altogether particularly indicated, but they contribute to the recovery.
6. Alcohol acts directly upon cold œdemas and promotes their resorption.
7. Compressive alcoholic bandages surely prevent necrotic inflammation such as those sometimes observed with injections of cocaine-adrenaline.
8. Infected wounds do not suppurate when dressed with alcohol, but if this is absolute alcohol, the repairing work will be arrested.
9. With well-bred and irritable horses, alcohol gives some-

times rise to superficial irritation of the skin. Although this passes off rapidly, it must be looked for.

10. Dressings used in man are not to be applied for animals.

11. Alcoholic compresses promote hyperhermia, well marked, and an abundant lymphatic exudation.

12. Applied on the extremities of rabbit legs, the promoted exudation under the skin exists with the same intensity in the tissues deeply situated; the therapeutic effect is then not only superficial, but involves the deep ones.

13. The congestion resulting from this treatment is observed in the muscles, the periosteum and the marrow of the bones of the region surrounded with the compresses.

14. Although more marked in the cellular tissue, the most marked transudation is also observed in the muscles, the tendons, and even the fibrous structure of the periosteum.

15. In the region, swollen because of the treatment, the microscopic examination reveals numerous cariocynetical figures, manifest evidences of the activity of the cells.

16. By itself the treatment with alcoholic compresses does not disturb the nutrition of tissues.

17. The hyperhermia and the œdamatous transudation are two processes absolutely distinct.

18. The œdema is probably due to the presence of a lymph, which is rapidly renewed; it cannot be considered a passive œdema.

* * *

PROCEEDINGS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, 1911.—This is the title of an enormous volume which came to me a short time since, under the shape of a big bundle, postage prepaid, and my surprise was very great when I had relieved the book of all its enveloping covers, which, made for protection, failed entirely in their duties. The external appearance of the proceedings was not in favor of their contents. However, they arrived safe as they were.

If one can judge of the improvements and progresses that an

association makes year by year by the size of the publication of its proceedings, there can be no doubt that the A. V. M. A. has made great advance, even if the comparison is made only in the last four years. In 1908 and 1909 the proceedings covered between 400 and 450 pages, in 1910 they required 515, but for recapitulating the work done in 1911 it was necessary to gather them under no less than over 700 pages—716, to be exact.

Dr. Richard P. Lyman, as chairman of the Publication Committee and as editor of the proceedings of the forty-eighth annual convention, you deserve the thanks of the American Veterinary Medical Association for your work, which must, no doubt, have been immense, and if some erratas have been committed in the binding of the book, unfortunately marring the perfect arrangement, everyone knows that it is no fault nor neglect of yours.

The pictures of the staff of the association for 1911 open the doors of this book, and then the list of contents. Of course, the same as usual, the address of welcome, the reports of officers and committees, among which special attention ought to be given to that of the Committee on Intelligence and Education, with papers from Dr. C. H. Stange, of Ames; of L. A. Merilat, of Chicago, and Director V. A. Moore, of Cornell. The reports of the resident secretaries seemed to be of lesser importance than those of preceding meetings, although 23 States were heard from. The reports of the Committee on Diseases, with Dr. B. F. Kaupp as chairman, presented valuable and interesting papers from Dr. J. R. Mohler on "Dourine," Dr. W. H. Dalrymple on "Foot-evil in Horses and Mules and Sore Mouth in Dogs," Dr. A. T. Kinley on "Biologic Products Used in Veterinary Medicine," and Dr. C. H. Higgins on "The Laboratory and the Practitioner." The report of the International Commission for the Study and Methods of Control of Bovine Tuberculosis, those of the Committees on Publication, on Army Legislation, on Necrology, of the Spécial Committee on Insular Possessions and of the Committee on Association of Faculties closed this enormous quantity of work done by the various committees.

More than half of the book is occupied with the above material, and now comes the list of the various papers which were read before the sections of the meeting. I cannot mention them, as the list is too long and will not permit me a review, even general as it might be.

Accessory subjects complete the entire contents, the surgical clinic, the social features, etc. But to appreciate the work done one must read the proceedings carefully, study the papers, become familiar with the discussions, minutely examine the excellent plates that illustrate the work, and only then will it be possible to realize that the American veterinary profession is in its full development, in its perfect growth and can occupy the rank which it has the right to and has conquered by the energy and the work of its members.

* * *

After this imperfect and incomplete notice of the valuable proceedings above considered, I may be allowed two personal remarks.

One refers to the satisfaction that "John Smith" has to see that the American Veterinary Medical Association has at last taken in consideration part of his requests made years ago—a high, uniform standard for matriculation in veterinary schools and a uniform degree for all graduates. When John Smith presented his humble request it was severely criticised. It was said that the association had no right to interfere, suggest or impose. And yet to-day, by the resolutions passed at the meeting, the American Veterinary Medical Association has. A little more patience and we will get Hoskins' uniform board of licensing—another progress!

The second remark refers to the cable kindly sent to me by Drs. Mayo, Winchester and Leach, committee appointed to "return me greetings and express hope for my presence at the fiftieth anniversary as dean of our profession in America." This very amiable message I read off when I received the proceedings, and after some trouble found it at the Central Telegraph Post-

office, where it laid and where I obtained it on the 8th of February, addressed to *Paris, France*. The place is too big and the man too small. He could not be found. I will later give my friends a cable address, which will do away with the possibility of similar disagreements recurring.

* * *

PROCEEDINGS OF THE FIFTEENTH ANNUAL MEETING OF THE U. S. LIVESTOCK SANITARY ASSOCIATION were received and acknowledged already last month.

It is to be regretted that financial difficulties obliged the association to condense the report of the work and permitted only the publication of the essential subjects. If the revenue of the association is limited, provisions ought to be made to increase it, as certainly the profession wants to know *all* the work that is done by this excellent organization.

Quite interesting papers were read at the meeting and valuable information was presented on "Contagious Abortion in Cattle," "Dourine," "Glanders," "Hog Cholera," "Rabies," "Texas Fever" and "Tuberculosis." This last has been the subject of important contributions by Mr. A. J. Glover and Drs. Robert W. Ellis, Veranus A. Moore, K. F. Meyer, A. D. Melvin and N. S. Mayo.

The following resolutions were voted unanimously at the meeting:

"Resolved, That the U. S. Livestock Sanitary Association again places itself on record in favor of any proper effort which will authorize the Bureau of Animal Industry to supervise the production of all veterinary biological products.

"That the production and distribution of hog cholera serum, virulent blood and vaccines be under the direct supervision of the proper State authorities.

"That we deem it wise to call attention to the serious importance of infectious abortion among cattle and horses and advise that more instructions on this subject to stock owners to be given

in agricultural colleges, farmers' institutes and the agricultural press.

"That this association places itself on record as discountenancing the action of any State which shall employ or empower anyone to apply the tuberculin test, officially, who is not a thoroughly competent and qualified veterinarian.

"And that we deplore most sincerely the attitude of the State of Illinois regarding the tuberculin test, and that a copy of this resolution be forwarded to every member of the State Legislature and to the Governor and to any others interested."

All of these form a good record for this fifteenth meeting of the U. S. Livestock Association.

* * *

SPECIAL NOTICE.—I have just received the following information relating to the one hundred and fiftieth anniversary of the foundation of the first veterinary school of the world and to the International Congress of Comparative Pathology, to both of which American veterinarians have been invited in previous chronicle:

The festivals of the first will be on the 1st and 2d of June, 1912.

The congress will hold its meeting between the 17th and 23d of October of this year.

A. L.

THE ARMY VETERINARY BILL.

LET YOUR ENMITY TO THIS OPPOSITION RING TRUE AS THE SOUND
OF THE HAMMER ON THE ANVIL.

We who are all members of the veterinary profession of the United States may be graduates of very different colleges, and our views on veterinary methods may be as different as a black, wintry night is from a day in May, but we are all of one mind and of one opinion in this—in the pride we take in our profession. If there is any one sentence to which we give utterance, in

which is expressed with so much frequency the unity which this gives us, scattered though we are by the tens of thousands all over our fair land, it is that happy expression, "I am proud I am a veterinarian." We feel, therefore, that we all, because of the pride we have in our profession, are certain spontaneously to be of one mind in our opposition against those who block its progress, or hold it back from its destiny, which is to stand in equality with all other professions in the country. We rightly take pride in our profession. We are in the right when we fight, with all the manly, masterful strength with which we are endowed, against the forces which set up opposition to our professional advancement, which tend to deaden our hopes, and which keep our profession a miserable, unformed, ridiculous dwarf in the public eye. There is not a veterinarian in Rhode Island, in California, in Minnesota, in Texas, or anywhere else in the stretch of the country who does not oppose with a burning, perfect rebelliousness such opposition, whose pride, when he is fully aroused to the meaning of it, would not be stung by it, and who would not, provided he is shown the way to do so, instantly unite his energies with the energies of all other veterinarians in America to drive such opposition to the interests of our profession to the wall. This is the pride which sustains our profession in face of the enmity to its progress.

The great battles for veterinary progress, which concern the whole profession, must be fought out and won by the American veterinary private practitioners, taken as a whole, because they constitute by far the majority of the membership. Consequently, we wish to speak now more particularly to them as a private practitioner to his fellow practitioners on the worst form of opposition to our advancement which exists in the United States to-day, and we want them to feel that our words are personal, sincere and out of the depths of our heart. The editors of the REVIEW are, and have always been, private practitioners. There is no practitioner who knows better than they how difficult it is to take an hour from a busy day of practice, or an hour in the evening, when weariness is upon a man after a hard day's toil, and devote it to

the assistance of those who are ambitious to improve the profession, and to carry on warfare against those very forces which oppose our progress. Yet these are the very men who must be depended upon to carry forward movements for the good of the whole profession as they come along, and win battles against the opposers of professional advance. The busiest practitioners, by scores, hundreds, nay, thousands, are just the men who are ready for the thick of the fight; they are ready to take up the cudgels and strike at opposition to the profession to which they have given their heart and their hand. Undeniably, the question of the present moment which is most agitating the minds of veterinarians throughout the whole nation, and which has mightily stirred up the many thousands of our members in all the states, so that all veterinary associations, municipal, state and national, are tingling with interest in it, is that of the passage of a law by Congress for the relief of veterinarians in the United States army. They are our colleagues and brother practitioners, whose position for the prolonged agony of forty-nine long years has been one which sinks them in humiliation and is a disgrace to us for permitting it. Because the profession is comprised so largely of private practitioners, the fate of the bill for the alleviation of this condition, known in the House of Representatives as H. R. 16843, and in the Senate as the Penrose Bill, S. 5792, is in large measure in their hands.

Private practitioners of America, what are you going to do about it? By the tyranny of the War Department and the negligence of Congress your brother practitioners in the army have been, as we said in an editorial in the April REVIEW, kept down in a position of servility. This should be remedied now and forever by the passage of the bill. A New York philosopher has recently said: "Every good thing has been condemned in its day and generation. Every innovation has to fight for its life. Error once set in motion continues indefinitely unless blocked by a stronger force and old methods of thinking and doing will always remain unless someone invents a new and better way and then lives and dies for it. And the reason men oppose progress is not

that they hate progress, but that they love inertia." The profession is fighting with all its might for the change which we know should be made and against the stubbornly held but fossilized views the War Department has regarding the veterinarian. If you are, as you say, proud of your profession, you will exert every pennyweight of your energy to secure the passage of this most important bill. Because of the approaching general election and the possibility of a change of parties members of Congress are solicitous of your votes. They must help us if we are to aid them. Bind them over to support the Army Veterinary Bill. Your enmity to the present state of veterinary affairs in the army should ring true as the sound of the hammer on the anvil.

THE BREEDING QUESTION.

Probably no question in connection with agriculture bears a closer relation to veterinary science than the breeding question; therefore no question demands the attention and careful study of the veterinarian more than does this vital one in zoötechny. And if the veterinarian would fill the niche that is open to him in the field of agriculture and add his mite in the upbuilding of that important science so closely related to his own, he must be a careful student and close observer of nature's laws, and must look beyond the surface, where he will find that much which has for generations been regarded as fact will be found to be but mere conjecture. An illustration is given by Dr. Edw. A. Cahill in an article on "Cystic Ovaries and Sterility" in the April issue of the AMERICAN VETERINARY REVIEW, in which the doctor points out the presence of cystic ovaries as being the real condition accountable for sterility, which is usually attributed to "closure of the womb" by the laity, a condition which they attempt to overcome by dilation of the os themselves, or call in a veterinarian to do it for them, who accepts the cause which they have attributed as being responsible for sterility in the subject, and proceeds along the same lines to overcome it, not only

without the results that would be obtained by directing their attention to the real cause, ascertained by a careful examination of all the reproductive organs, but often doing much harm by the operative procedures directed upon those organs not involved. The science of breeding is one that has always been of extreme interest to us, and it is, therefore, with great pleasure and satisfaction that we note the general interest that is being taken in it by the veterinarians of the present day, stimulated by the training and encouragement in that direction that is given them as a part of their college course in veterinary medicine—a stimulus which actuates in the student a desire for a *broader* knowledge of this subject, which he is taught is so important to the agriculturist who makes the production of livestock his specialty, and so vital to his own success as a practitioner of veterinary medicine in the breeding districts. He, therefore, enters the field of his activities in a studious mood, eager to apply his scientific training to actual conditions, and, while broadening his own knowledge, becomes an actual benefit and necessity to the livestock owners in his community. The fact that he is attracting the attention of the stockmen by his interest and ability along those lines was recently manifested in a short article appearing in one of the stock journals, commenting favorably upon the work performed by veterinarians in the livestock districts and regretting that *all* were not equally competent in that particular kind of work. And while the criticism was resented by some, because coming from an agricultural paper, we believe that it was not unkindly or slightly meant; and with the knowledge that ability in that direction is appreciated by the stock raiser, and that the eyes of the stock journals are upon their work, it should act rather as a stimulus for *all* to qualify as competent. We, therefore, with the hope of encouraging advancement in this line of veterinary knowledge, invite a free exchange of ideas on breeding problems through the medium of the AMERICAN VETERINARY REVIEW and freely offer its pages for that purpose, believing that it is an important side to veterinary education that

can be broadened in no better or more pleasant a manner than by the contribution of short, interesting papers dealing with different phases of the subject. As a beginning, we can promise REVIEW readers a paper in an early issue on "Artificial Impregnation" by no less an authority than Prof. L. L. Lewis, M.S., D. V. M., veterinarian and bacteriologist to Oklahoma Agricultural and Mechanical College, Agricultural Experiment Station, Stillwater, Oklahoma, whose work in the production of Bulletin 96 on "The Vitality of Reproductive Cells" attests his unusual ability in that direction, his immense fund of information on the subject and the great amount of experimental work which he has done, with the object of replacing conjecture with positive knowledge, with the idea of demonstrating the possibilities of artificial insemination in the breeding of animals, especially in horse breeding, which is of vital interest because of the prominent place that that industry occupies in our country. Prof. Lewis' chapters in Bulletin 96, demonstrating by experiments on various kinds of animals, the "Vitality of the Sperm Cells Within the Body of the Female," "Vitality of the Egg Cell or Ovum," "Vitality of Semen Under Laboratory Conditions," "The Effect of Continuous Service on the Number and Vitality of Sperm Cells," "Size of Reproductive Cells" and "Effect of Various Conditions, as High Temperature, Sunlight, Chemicals, etc., on the Vitality of the Semen," are extremely interesting and instructive, and bespeak the quality and character of the paper that our readers may anticipate from his pen.

FORECAST OF A. V. M. A. MEETING AT INDIANAPOLIS.

Plans for the big five day meeting are fast assuming form, and the arrangement of the programme promises the accomplishment of a vast amount of work during that period of time. Section work seems to have become a permanent feature, and this year the programme will be divided into three sections; one on

surgery in charge of Prof. W. L. Williams, of Ithaca, N. Y., one on sanitary science and police in charge of Dr. Charles H. Higgins, Ottawa, Canada, one on general practice in charge of Prof. H. D. Gill, of New York City. "Das Deutsche Haus" seems to lend itself to the sectional plan, having plenty of meeting rooms convenient to each other. The idea is to devote the forenoons and evenings to association work, leaving the afternoons of each day during the week for section work. All phases of veterinary science will be represented in the programme enacted, and general practice will be one of the strong features.

MR. GEO. L. FLANDERS, First Deputy Commissioner of Agriculture, State of New York, under ex-Commissioner Pearson, was appointed Counsel to the Department of Agriculture, April 2, 1912, by Commissioner Calvin J. Huson, and Mr. Harry B. Winters, President of the New York State Plant Breeders Association, Treasurer of the New York State Agricultural Society and director of the Certified Milk Producers' Association of America, was appointed to succeed Mr. Flanders as First Assistant Commissioner.

BIOLOGICAL PRODUCTS, is the title of a paper read before the Canadian Public Health Association at Montreal, in December last, by Chas. H. Higgins; D. V. S., F. R. M. S., pathologist to the Canadian Department of Agriculture; and published in the *Public Health Journal*, Toronto, Canada. It has been our privilege to peruse a reprint of this paper, which deals with the evolution, as it were, of biological therapeutics, methods of their preparation, etc., in which the doctor refers to the large variety of these preparations, some of which, he states, "have secured an enviable reputation in the diagnosis, prevention and treatment of disease; many are undergoing the evolutionary period, a few of which will eventually be discarded, while others have been wholly unable to survive the vicissitudes of either practical or theoretical experimentation." We believe that this applies to both human and veterinary medicine, and shall publish Dr. Higgins' paper in our next number, believing that it will be a material aid to practitioners, in their efforts to gain a clearer and saner conception of the practical application and value of that side of medicine.

ORIGINAL ARTICLES.

RECENT METHODS FOR THE DIAGNOSIS OF GLANDERS.*

BY F. B. HADLEY, D.V.M., UNIVERSITY OF WISCONSIN, MADISON, WIS.

This paper has been prepared more for the interest of the every-day practitioner than as a strictly scientific contribution. It is hoped that the information it presents may help to lessen the difficulty of choosing a suitable diagnostic agent from the numerous tests which have been devised for the diagnosis of glanders in horses.

With this end in view, a somewhat limited comparative study has been undertaken of the recent methods which have been advised by various scientists as a means for the determination of glanders, together with some notes on the harmonization of these different methods.

By recent methods is meant those which have come into use since the science of bacteriology has developed along pathogenic lines, and especially since the serum and toxin diagnosis of disease has assumed prominence. Each method to which reference will be made has been brought forth with the hope that it would determine with accuracy whether the horse was glandered or free from the infection. All have not fulfilled the hope entertained.

Three of the methods require the blood serum of the animal as a basis for the respective tests. The blood is drawn from the jugular vein of the horse by means of a large hypodermic needle or a capillary trocar. The instrument should be pointed upward when inserted and the blood caught in large-mouth, sterile bottles with a capacity of about one ounce. On being allowed to stand at room temperature for a few minutes, the blood corpuscles set-

* Presented to the Wisconsin Society of Veterinary Graduates, January 24, 1912, at Madison.

tle, leaving the plasma above. Both quickly clot. After a few hours the serum gradually separates from the plasma clot, due to the formation of fibrin, and is ready for removal to another sterile bottle.

1. *The Precipitation Test.*—The so-called precipitation test of Konew is one of the newest methods. We presented a brief summary of this reaction at the last annual meeting of this society. According to the discoverer, (1) this test is based upon the fact that certain antibodies are formed in the bodies of animals infected with glanders bacilli from the time the organism first gains entrance to the tissues. He is of the opinion that among these antibodies the precipitins are the first to be formed. Accordingly, an attempt was made to use them in diagnosis.

A solution of glanders bacilli dissolved in an 8 per cent. anti-formin solution is required for the reaction. The test fluid has been given the name "mallease." The method has been advised by Mohler (2) as a fairly accurate means of diagnosis.

It is known that malleination influences the serum in the same manner as does infection with glanders bacilli, but the reaction to such a test as the one in question is not so marked and lasts a shorter time. This test is, therefore, interfered with for a time, if the animal has recently been injected with mallein.

Our study of this agent was accordingly first directed toward the determination of the time necessary to elapse after the injection of a horse with mallein before the reaction was reliable. For this purpose a number of horses apparently free from glanders were given the usual mallein test. Pre- and post-injection temperatures were recorded. None of the animals showed a rise of temperature after the injection and, therefore, all were assumed to be free from the disease. Blood was drawn from the horses at frequent intervals thereafter, and the sera thus obtained were given the precipitation test. On account of the unsatisfactory results which were later experienced with the mallease, our experiments along this line were of little value.

The results of the test when applied to suspected cases of glanders may be seen in the accompanying table. Positive reac-

tions were obtained with serum from many of the horses upon which it was tried. At first we were inclined to believe that the method of preparing the agent was defective or possibly the culture from which it was made was attenuated and thus influenced the test. Upon using at least four different preparations of the mallease, manufactured from two different strains of the organism, we were unable to get satisfactory results.

Our experiments have been limited in number, so we are not in a position to draw definite conclusions. However, if the reaction is so delicate as appears, it seems entirely too sensitive for ordinary clinical use.

The only inference we can draw from our work with mallease in conjunction with our other tests on glandered, suspected and healthy horses is that it is unreliable. In fact, we attempted to base a diagnosis upon this test alone, and pronounced certain horses free from the infection on the strength of a negative reaction. Later other tests were used on the same animals and positive reactions of an undoubted nature were obtained, necessitating a change of diagnosis, as well as placing us in a compromising position.

2. *The Agglutination Test or Gruber-Widal Reaction.*—This test is also based upon the formation of certain specific antibodies which are present in the blood in the early stages of certain infectious diseases. These antibodies are known as agglutinins. Their formation is stimulated in the case of glanders by the bacilli which cause the disease. The particular part which these substances play in the organism is not fully known.

The phenomenon of agglutination can be demonstrated in a test tube or microscopically. It consists of a clumping of suspended bacilli specific for the infection. It is especially applicable in glanders, as many cases in the first stages of development, impossible to be determined by the usual tests, are readily diagnosed.

The test fluid necessary for the experiment is made of a suspension of a known agglutinating strain of the glanders bacilli killed by heating to 60 C. for two hours. To insure safety, as

well as to preserve the fluid, it has been found advisable to add 2 per cent. carbolic acid. Moore, Taylor and Giltner (3) and several others have published valuable literature on this subject.

Normal blood serum possesses this agglutinating power in low dilutions. In certain cases the reaction is even noted in dilutions of 1/800 or higher. Usually, however, such serum is inactive in dilutions higher than 1/500. This property is greatly increased in an infected animal.

A series of dilutions in the proportions of 1/200, 1/500, 1/800, 1/1,000 and 1/1,200 were prepared in our tests. The test tubes containing the mixture of blood serum from the suspect and the glanders suspension were incubated at 37° C. for twenty-four to thirty hours. At the end of this time the reaction, if present, was well marked.

By the term reaction is understood a gradual clearing of the previously clouded fluid, due to an agglutination of the suspended bacilli and their consequent settling to the bottom of the test tube. In the lower dilutions the clearing is absolute, and the sediment completely covers the bottom of the test tube, under certain conditions being so heavy as to roll up at the sides. In the higher dilutions the clearing may be only partial to be positive. All control tubes should remain uniformly turbid.

The accompanying table gives a very good illustration of the results of the test upon the horses in question. The greater number gave the reaction in the 1/200 dilution, some in the 1/500 dilution, and two in the 1/800 dilution. Variations in the agglutinating power of the blood may occur within narrow limits in the healthy horse. If variations are marked the animal should be considered suspicious. All horses which gave a reaction in the 1/1,000 dilution proved to be glandered by other tests. Consequently such animals should be considered diseased and immediately quarantined or destroyed.

Case No. 2, although in the last stage of glanders, did not give the reaction in the 1/1,200 dilution. This may be accounted for by the fact that serum drawn at this stage of the disease

CASE NUMBER.	PRECIP- ITATION	AGGLUTINATION.										MALLEIN.		COMPLE- MENT FIXATION.	GUINEA PIG INOCULA- TION.	POST- MORTEM.
		First Test.					Second Test.					First Test.	Second Test.			
		1:200	1:500	1:800	1:1200	1:200	1:500	1:800	1:1000	1:1200						
1	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
2	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
3	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
4	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
5	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
*6	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
*7	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
8	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
9	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
10	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
11	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
12	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
13	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
14	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
15	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
16	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
17	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
18	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
19	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
20	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
21	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
22	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
23	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
24	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
25	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
26	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
27	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
28	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
29	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
30	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
31	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
*32	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+
*33	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+	+	+	+	+++++	+

*Control.

loses its power of agglutination, due to the decrease in the activity of the agglutinins.

Case No. 12 gave no reaction to the agglutination test, but did to the two mallein tests. The mare was kept under observation until taken to a neighboring town, up to which time no clinical symptoms were shown.

Case No. 15 will be noticed to have given a decided, positive reaction with this method, although the temperature chart obtained from the injection with mallein was unsatisfactory, on account of the impossibility of making either a positive or negative interpretation, due to the rather high pre-injection temperature. This animal would have been considered suspicious under the first mallein test, but the agglutination test clinched the diagnosis. This was further verified by the appearance, shortly afterward, of clinical symptoms in the form of enlarged submaxillary lymph glands. Some six weeks later the swelling had nearly disappeared and the mare seemed to be enjoying good health. The second agglutination and mallein tests were both positive. Undoubted clinical symptoms appeared within a few weeks. Post-mortem examination revealed well-marked pulmonary lesions.

For ordinary clinical use we have found this method of diagnosis very desirable, and thus sustain the experience of other veterinarians. The results are particularly reliable in cases of recent infection; chronic cases may occasionally give an agglutination value lower than that of a healthy horse.

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THE Shawano County (Wis.) *Journal*, of April 4, announces the choice of Veterinarian B. Royer, as Mayor. We are sure the veterinarians of his city and state extend to him their hearty congratulations, as does the REVIEW.

HOW WILL THE ERADICATION OF THE CATTLE TICK BENEFIT THE PRACTICING VETERINARIAN?

BY A. C. STEVER, VETERINARY INSPECTOR, U. S. BUREAU OF ANIMAL INDUSTRY.

(Continued from April Issue.)

Immunity.—Through the experiments of the United States Bureau of Animal Industry, 1892 and 1893, it was suggested that the production of a mild non-fatal attack of Texas fever in cattle afforded a very considerable protection against the disease.

The methods advanced for producing such a mild, non-fatal attack were:

First—The artificial inoculation, intravenously or subcutaneously, of defibrinated blood into a now immune cow.

Second—The less certain way consists of the exposure of non-immune animals to ticks by confining them in inclosed pastures after scattering ripe-egg-laying ticks over the grass.

From 1895 to 1897 additional experiments were conducted by the bureau with the object of further demonstrating the possibility of immunizing cattle against Texas fever by the use of blood obtained from southern cattle. While the results obtained seemed to be satisfactory, still, from actual field experience and through information obtained from various scientific men engaged in the work of tick eradication, it seems to me that the term immunity in connection with this disease is really a misnomer, because cattle can pass through either the acute or chronic form, be freed of ticks, placed on free premises, and should their systems become devitalized through any predisposing cause, such as exposure, etc., probably they will contract the disease several years after they have attained this stage of so-called immunity.

Microbiology.—The piroplasma bigeminum passes through a

series of forms in the blood. Theobald Smith found in the red globule, and attached to its margin, a pale round body, 0.5 microns in diameter, and staining freely in alkaline methylene blue, in other basic aniline dyes and in hemotoxylin, but not in acid-coloring fluids. These were found in acute cases, often in company with the pear-shaped bodies, and usually in the absence of the piriform bodies in chronic cases. The red cells containing these rounded organisms were not cremated or distorted, though 50 per cent. of them might contain the parasite. He looked on these as the earlier stage of the organism, which later developed into the piriform body, by segmentation of its substance. The piriform bodies were usually found in pairs, connected at their pointed ends by a filament and extending across nearly the whole breadth of the red globule.

Incubation.—Outbreaks occurring in the North, in herds into which southern infected cattle have been brought, were at first held to indicate an incubation of 30 or 40 days (or even sometimes 65 days), but this is now explained for the time required for the laying and hatching of the eggs of the mature ticks and the evolution of infecting young larvæ or seed ticks. The actual incubation as shown by the subcutaneous or intravenous injection of the blood of an infected ox extends from 3 to 10 days.

Symptoms (Acute Type).—The first symptom is a rise of temperature, and this may last two or three days before other morbid phenomena are noticed. It may rise to 104 F. in the first day and later to 107 or 108 degrees F. The more acute the case and the hotter the weather the greater the rise. The temperature often rises from 2 to 4 days, and then suddenly drops, with the occurrence of collapse and imminent death. After two or three days the respiration becomes accelerated to 60 to 100 per minute and the pulse to 90 to 100 or more. There is complete loss of appetite and rumination after the development of these symptoms, the mouth is hot, and it may be dry, the muzzle dry, the head pendant, the eyes dull or semi-closed and congested (usually icteric), the bowels confined, to be relaxed again as the

fever subsides. A disposition to stand or lie down in water is frequently noted. Nervous symptoms are usually present. The extreme dulness, languor and apathy, the drooping head and ears, the unsteadiness of support, the animal staggering or propping himself up by spreading all four limbs and the tendency to assume a recumbent position are marked phenomena in our domesticated cattle.

The paresis may absolutely incapacitate the animal from getting up. In our wilder-range cattle it may show itself in active delirium, the animal lying dull and apathetic; on being approached, may raise his head, open his eyes and glare threateningly at the intruder. Sometimes, when trembling violently and swaying, ready to fall, he will marshal all his remaining energy to plunge at a man. Some have become blind and unconsciously walked against obstacles; others have been noticed to run in wide circles.

The milk secretion is suppressed and abortion is common in the pregnant cow.

The condition of the urine has, however, always drawn especial attention, and the names red-water and hemoglobinuria have accordingly been applied to the disease. Shortly after the rise of temperature the urine becomes turbid and this gradually increases to a more or less deep red. It assumes its darkest hue when the destruction of red globules is most active and during convalescence it disappears. The coloration is not due to red globules, but to the hemoglobin which has escaped from the disintegrating globules and been eliminated by the kidneys. It is always associated with albumen, and in the advanced stages and during convalescence, when the elimination of hemoglobin has ceased, that of albumen continues for several weeks.

The bowels are at first constipated and the fæces passed is small, hard balls. Later they may receive a reddish-brown or chocolate color, and a covering of mucus and fine blood clots. Diarrhœa supervenes in some cases.

Course and Duration.—Acute cases, above all, if traveled or

excited, may terminate in death in from 24 to 48 hours. More commonly death will take place in from 4 to 7 days. Some patients survive longer, but owing to the extraordinary loss of blood globules and the lesions of important solid tissues they are unable to rally, become steadily weaker and perish in from 3 weeks to 3 months. Such animals are pale and bloodless, weak in their limbs, careless of food and increasingly emaciated. The pulse is weak and irritable and the eyes sunken.

In cases of recovery there remains for a month or more an unnatural pallor, with marked loss of condition and weakness, which are only gradually overcome. Convalescent animals are liable to die of indigestion when overfed.

Mortality averages not less than 90 per cent. in susceptible mature animals from a healthy district in the hot season. Later, from October onward, the tendency is toward a milder type of the disease and a greater ratio of recoveries.

Mild Type.—This is seen mainly in cattle indigenous to the Texas-fever district in suckling calves. It can be produced at will by placing a limited number of ticks (5 to 20) on the skin of susceptible cattle, especially in the cool season. Again, it occurs as a relapse in cattle that have survived an attack earlier in the season.

In mild cases the temperature does not arise above 105 degrees F. There is loss of appetite, dullness, languor, costiveness, scanty urine (albuminous, but not hemoglobinuria), pallor of the mucosa and marked loss of condition. Examination of the blood shows the presence of the parasite in the red globules, but usually in the coccus or round form only.

Pathological Changes.—Upon cutting into the hide and skinning the carcass, marked lack of blood in the bloodvessels and underlying tissues is observed. Occasionally there may be noticed a jaundiced discoloration of these tissues. The fatty tissues are also yellowish and are soft and oily.

Probably the most marked pathologic alterations in the disease are found in the liver. This organ is very much enlarged and has a yellowish, mahogany-brown color, due to the bile it

contains. The gall bladder is usually distended with bile, and petechial spots are often noticed on its membranes.

The bile is very thick, has the appearance of "chewed grass," and contains numerous firm, irregular flakes. The spleen is greatly enlarged, sometimes reaching four times its normal dimensions, and very dark in color.

The kidneys are usually very dark in color and congested, and, on cross-section, the normal markings are indistinguishable.

The bladder usually contains a varying quantity of urine, which may or may not be blood-stained.

No characteristic lesions are found in the stomach and intestines. The intestines usually contain considerable bile and there is more or less œdema of their walls.

The pericardium, also the endocardium, usually contains pinpoint hemorrhages.

Differential Diagnosis.—There are two diseases which may be confounded with Texas fever, viz., anthrax and blackleg. Although these diseases are frequently mistaken one for the other, there are numerous differences between them, which, if carefully considered and taken together, are usually sufficient to establish a diagnosis.

The following are the main features of Texas fever not found in anthrax: Presence of ticks. Young suckling calves, as a rule, are not affected. The mucous membranes become extremely pale and jaundiced, while in the anthrax they are congested, with the bloodvessels standing out prominently. The blood is thin, pale and watery, while in anthrax it is tarry, black and incoagulable. The bile is semi-solid and contains numerous hard flakes, while in anthrax it is fluid. The liver in Texas fever is enlarged, yellowish and mottled, while in anthrax the liver, though enlarged, is very dark and congested.

The majority of victims of blackleg are between 6 months and 2 years of age. In blackleg there are present superficial crackling swellings, which, on being opened, are found to contain gas bubbles, with the peculiar odor characteristic of the disease. There is also an absence of blood-stained urine. On post-mortem

examination of blackleg the liver, spleen and kidneys are apparently unaffected.

Treatment (Prophylactic).—Free your cattle of ticks by either spraying, dipping or mopping with a parasiticide, preferably the arsenical preparations; place the cattle in a pasture that has been vacant for at least one year prior to the transfer.

Medical treatment is usually unsatisfactory, although in chronic cases beneficial results have followed. Purgatives, followed by febrifuges in broken doses. Stimulants and tonics are recommended. Good nursing is essential; the animal should be given a nutritious laxative diet, with plenty of clean and cool drinking water, and allowed to rest in a cool, quiet place.

S. Dodd finds the treatment with Trypan blue a very efficient remedy. He states the most favorable results are obtained when it is injected at an early stage of the disease.

I believe the State experiment station last year conducted some experiments with Trypan blue, but the experiments were not fully tried out; therefore, I am unable to give data regarding results. However, in view of the fact that it is not a specific, does not render the animal immune; also, the treatment is very complicated; it does not seem probable that it will gain much of a foothold with the practicing veterinarian.

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NOTE—The theory has been advanced that certain breeds of cattle, especially those known as the Brahma or sacred cattle of India, are immune to tick infestation. When this important point was announced it attracted world-wide attention, and it was at once taken advantage of in the infected area of the United States for a thorough trial. The first herd of this breed of cattle was imported and introduced into the State of Texas. They were allowed the use of the range and the bulls were crossed with the native stock of that country. It was soon noticed that the American fever tick did not infest these animals to such a great extent as they did native cattle, and the owner became greatly enthused and observed that even his cross breeds as low as the quarter and sixteenth cross failed to carry as many ticks.

The idea was then announced that these cattle were immune to tick infestation and people generally throughout the tick infested area became interested.

This announcement was of such importance that the United States Government put men into the field to investigate and ascertain the facts. It was found that this particular breed of cattle was not especially adapted for general use in this country for either beef or dairy animals. They develop slowly, the flesh is hard and tough, and they hardly produce more milk than is necessary for the calf.

The question of ticks received close attention. It was found that ticks did infest these animals, but probably not to as great an extent as they did native cattle. The skin of these animals is exceedingly tough, secreting an abundance of sebum which produces an oily and odoriferous condition, which was thought to be offensive to ticks. The hair being short and the skin tough did interfere with tick infestation to a certain extent. A series of experiments proved that these cattle at any cross were subject to tick infestation and fever. The cattle and the immunity to ticks has not been well taken in this country.

ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

BY D. E. SALMON, D.V.M., MONTEVIDEO, URUGUAY, S. A.

VI.

THE NASAL ULCERS OF THE HORSES.

The horses of the Deer Lodge Valley suffered from a peculiar form of nasal ulceration, locally called "sore noses." In the fall and early winter, one-half to two-thirds of the horses on some of the ranches might be found affected, and, in extreme cases, 100 per cent. presented such lesions more or less developed. The ulcers were usually situated in the floor of the nostril near to the septum, at or near the external orifice, and might be one and one-half or even two inches in diameter. Their surface was, in most cases, covered with thick, hard, dark-colored crusts, under which was more or less necrotic material, then the vascular floor of the ulcer, and beneath this a compact, fibrous layer, difficult to cut. The ulceration was accompanied by considerable loss of tissue, so that when the healing occurred and the scar tissue contracted, the wing of the nostril was drawn towards the septum, partly, and sometimes almost completely, occluding the nostril. This sequel of the ulceration greatly damaged the appearance of the horses, and, in some cases, decidedly interfered with respiration, especially when at work. In rare cases there was ulceration of the septum, with complete perforation.

The farmers contended that this ulceration was due to the local action of the arsenic, which entered the nostril with the dust from the grass on which the animals were feeding, and, being dissolved by the secretion of the nostrils, exerted its destructive influence on the tissues over which this secretion flowed. The smelter company, on the contrary, held that it was not the result of arsenical action, and their experts broached the theory that it was due to microbic infection, stating as the basis for this con-

clusion that the lesion began as a nodule deep in the tissues, and that microscopic examination of sections revealed a proliferation of the tissue elements.

The writer had an opportunity of examining these lesions in their early stages, and observed at the beginning an appearance as of a superficial abrasion, from one-fourth to one-third of an inch in diameter, which rapidly extended laterally and became deeper by destruction of the tissues until the typical lesion was developed. There was no abscess formation and very little supuration in the lesions which he observed. However, even in the absence of microbic infection, it would not be surprising if some of the lesions commenced as a nodule beneath the epithelium; for an irritating liquid penetrating a hair follicle, a glandular opening or a small punctured wound would cause a local inflammation and a nodular swelling, and, possibly, a small abscess. Subcutaneous injections of arsenical liquids in horses often produce abscesses, even when the most rigid aseptic technic is followed. Therefore, in the opinion of the writer, the beginning of such a lesion as a sub-epidermal nodule is no more indication that it is caused by infection with a microbe than that it is caused by the penetration of a highly irritating liquid. Neither is the fact of the proliferation of tissue-cells of any value in the diagnosis between these two etiological factors. That there was proliferation was evident from the fibrous floor of the ulcer, even without microscopical examination, but bacterial irritants are, certainly, not the only ones which stimulate tissue proliferation. In order to understand the causation and development of these ulcers, it is necessary to make a more serious and exhaustive investigation of them from various points of view.

Historical Notes.—The first "sore noses" in the Deer Lodge Valley of which any account could be obtained, were observed in January, 1904, shortly after the operation of the smelter was commenced with the high stack. From that time up to and including 1906, they were observed each year in a large proportion of the horses at pasture. It was alleged by the farmers that, practically, the ulcerations were only seen when the horses were

at pasture. In very rare cases an ulcer had been known to develop when the horse was feeding upon hay; but in the great majority of cases, if the horses were taken from the pastures and fed upon hay, the sores rapidly healed.

In February, 1906, a great many horses were seen with large ulcers, but on the writer's return, late in June, no active ulcerations were to be found, though most of the horses presented cicatrices or partly occluded nostrils. It was not until late in August that the first ulcer was seen, and it was a month after that before they became common. That is, with the feeding of hay, the removal of the dust from the grass by the snows and rains of winter and spring, the changing of the air-currents so that the smoke was carried away from the valley, and the appearance of the young grass, which was either free from arsenic or carried but a small quantity, the ulcers healed and disappeared, and were not seen again until the smoke had returned to the valley a sufficient time to once more deposit a considerable quantity of the poison.

Referring to the notes made on the ground, there is found the following reference to smoke conditions:

"July 28. Observed the smoke going down the valley during the whole afternoon. While it has been seen on rare occasions since the last week in June drifting in that direction, it has not before been observed to cover the lower part of the valley as to-day."

After this date, the tendency of the smoke was more and more to veer around and pass over the valley, sometimes, especially at first, but an hour or two during the day, but later it would remain several hours at a time.

With the exception of one ulcer seen in August, and which it was alleged developed while the animal was feeding on hay, the first ulcers were noted under date of September 26.

One animal, a buggy horse, had a large sore in the left nostril; it was not sharply circumscribed, occupied the whole floor of the nostril and was covered with a nearly dry crust. There was no discharge and the slight appearance of moisture around

the edges seemed to be due to the natural secretion of the mucous membrane. This animal had been on pasture but eight or nine days, and the ulcer had developed during this short period.

Another horse, examined on the same day, had an ulcer covering nearly the whole surface of the floor of the nostril. The lesion was of the same character as in the former case, without any sharply defined border, but shading gradually into the normal, surrounding tissue. These animals were pasturing about two miles from the smelter.

Examining the horses on a ranch four miles from the smelter, on October 5 the following notes were made:

“One colt has a simple erosion of the mucous membrane. A second and third have excoriations and cracks extending from the lower border of the nostril downwards in one animal and inwards in the other. These cracks are located where the parts are moistened by the nasal secretion. One of these animals had scars of ulcers which it contracted in 1905. In one nostril was a crust, having the appearance of black mud, which was dry, hard and firmly attached to the hair and skin. When removed, there was found to be a loss of epithelium and a granulating surface underneath.”

There was practically no discharge from these ulcers. When the crusts were removed, the surface was seen to be simply moistened with a very thin layer of pus.

From this time until January, nasal ulcers were very common.

In order to obtain some further light on the etiology of these ulcers, certain experiments were made, of which a brief account will be given.

Experiments to determine if the ulcers could be reproduced by inoculation.—The material for inoculation was obtained by scraping the surface of a fresh ulcer, that is, one which had developed within a few days. The scrapings were made into an emulsion or suspension with distilled water and inoculations were made as follows:

October 3, 1906. Horse No. 1 inoculated in left nostril by the hypodermic injection of 1 c.c. of suspension; also, inoculated

in right nostril by rubbing the suspension into superficial scarifications.

On the same day, inoculated horse No. 2 by hypodermic injection of 1 c.c. of suspension in the left nostril, and by rubbing the suspension into superficial scarifications in the right nostril.

In all cases the point selected for inoculation was that at which the natural ulcers were most frequently located.

The inoculation by means of scarifications produced no effect in either horse. In two days the scarifications were healed and no lesions developed subsequently.

The hypodermic injection of the suspension caused a small, tense swelling in both horses at the point of inoculation, ending in the formation of a small abscess and the escape of a few drops of pus, in No. 2 on October 9 and in No. 1 on October 12. Both were entirely healed by October 15, without any indication of ulceration.

From these experiments, it was concluded that there was no virus on the surface or in the floor of these ulcers which, when inoculated, would cause the development of similar lesions in other animals.

Experiment to determine if the ulcers healed readily when the horses were removed from the pastures and stabled.—As it was alleged by the farmers that the ulcers would begin to heal as soon as the horses were removed from the pastures and fed on good hay, it was deemed advisable to test the assertion by actual experiment. Accordingly, a horse in which very large and acute ulcers had just developed in both nostrils was taken from the Lappin ranch, 1.5 miles east of the smelter, October 2, and placed in a stable on the Para ranch, 4 miles north of the smelter, where it could be observed daily. It was fed on hay which was raised outside of the smoke zone. At the time the experiment was begun, there was no discharge from the ulcers, but they were very sensitive, and where the crusts were removed the ulcerated surface was seen to be covered with a very thin, whitish layer of pus. Six days later (October 8), the ulcers showed marked improvement. The crusts were beginning to

separate from the tissues beneath, the floor of the ulcer was granulating, and there was an increased secretion of pus. While the ulcers of this stabled horse were healing, fresh ulcers were developing in the nostrils of the horses on Para's pastures. One of these animals examined on this date, in addition to small sores within the nostrils, had the skin of the entire nose for three inches above the nostrils inflamed, thickened, covered with crusts and deeply fissured. A similar condition extended under the lower jaw for about the same distance. October 12, the ulcers of the experimental horse were rapidly healing and were already reduced to half the size which they were when the horse was put in the stable. October 28 the ulcers were entirely healed.

This experiment, which was confirmed by other observations, is quoted to show how readily these ulcers healed when the horses were removed from the influence of the smoke deposits. And the experiment is made the more conclusive by the fact that during all of the time that these ulcers were healing, those in the nostrils of the horses which were left on pasture, both on the Lappin and Para ranches, continued to develop, becoming larger and deeper with no signs of healing.

Experiment to indicate if the ulcers were transmitted by cohabitation.—When the horse from the Lappin ranch was placed in Para's stable, there was put with it a yearling colt, and both animals were free, eating from the same hay rack and feed box during the whole period that the ulcers continued. The colt was under observation until December 5, but did not at any time present any symptoms of nasal ulceration.

With these experiments indicating that the ulcerative lesions were neither contagious by cohabitation, nor inoculable by superficial scarifications or hypodermic injections, and proving that healing occurred as soon as the animals were removed from the smoke influence, a number of questions naturally suggest themselves as worthy of consideration in order to establish conclusively that the ulcers were the result of local arsenical action at the point where these lesions developed. These questions will

now be examined in the light of such further evidence as is available.

1. *Have similar lesions been observed in the neighborhood of other smelters*—Harkins and Swain(1) observed similar nasal ulcers in the vicinity of the Salt Lake smelters, and as they had examined many of these lesions in the Deer Lodge Valley, there can be no question of their competency to decide as to the similarity of the process. They further state, without giving their authority, that these ulcers have been reported from the district about the Great Falls smelter, and, also, from the smelting region in Cornwall. The writer has not been able to make any personal investigations in regard to this question.

2. *Does the dust deposited from the smoke of the Washoe smelter produce irritation of the skin and mucous membranes when applied thereto?* Here, again, the observations of Harkins and Swain must be referred to.(2) They say:

“Of the persons who worked on the smelter stacks in determining the arsenic content of the smoke, two became affected with an arsenical rash on the face, while the nostrils of the third were almost closed by a swelling caused by the irritant action of the flue dust.”

They say with reference to thresher dust:

“Complaints are often made by men working on these machines that the thresher dust from grain in the smoke zone irritates the skin and the mucous membranes of the eyes and nasal passages.”(3)

The writer frequently heard similar complaints from men engaged in threshing, and in some cases, it was said, sores would form on the parts of the body where the perspiration was abundant. It was difficult for this reason to get men to do the threshing on ranches where there was a heavy deposit of dust.

3. *What are the conditions under which the nasal ulcers of the horses are produced?*—Examining the horses at pasture at the time the ulcers were beginning and afterwards, it was observed that, generally, the interior of the nostril was covered with a thin layer of grayish-black material, which sometimes was

only barely visible, but at other times was so thick as completely to hide the mucous membrane. This coating was evidently the dust which the animal stirred up as it was biting the grass, and which was carried into the nostril with the inspired air and there deposited. The animals were able partly to expel this dust by snorting, and the increased secretions of the mucous membrane, excited by the dust, washed some of it away; but as eating the grass was resumed immediately, a new deposit at once took the place of the former. It is plain that the tepid, aqueous and alkaline liquid distilled from the mucous membrane must have dissolved a part of the soluble constituents of the dust, and that these constituents would be most concentrated in this liquid when it reached the lower limit of this membrane. If the dust contained arsenic in soluble form, and we know from the analyses of Swain and Harkins and of Haywood that it did contain such arsenic, then we may conclude that the mucous membrane and skin in the floor of the nostril, at the orifice, was constantly moistened with a liquid which held arsenic in solution. And, further, that an arsenical dust was constantly being deposited, forming with the liquid just mentioned an arsenical paste which was applied during the whole time that the animal was grazing.

Evidently we have here favorable conditions for the formation of an ulcer; and whether a prick or abrasion was necessary to start the process, or whether the penetration of this irritating liquid into a gland or follicle, or the mere maceration of the epidermis was sufficient, matters not from the present point of view. What was observed was, that after the smoke had been over the pastures for a few days, depositing a fresh supply of arsenic, and while this was in the most soluble form, the ulcers began to develop.

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(Concluded in June Issue.)

THE RELATION OF THE LABORATORIAN TO THE PRACTITIONER.

BY LEROY F. THOMPSON, D.V.S., FORT WORTH, TEX.

It is my aim to present to you for your consideration the many points in common that exist between the laboratorian and practitioner in as brief and concise a manner as possible and yet incorporate the essential features which tend to unite one to the other. It is my opinion that the laboratorian is not receiving at the present time due credit for his assistance in the relief of suffering and cure of disease, due partly to the lack of knowledge in regard to laboratory methods as carried on by him in the interest of science, humanity, and the animal world.

Without his tireless efforts being exerted in behalf of the practitioner, no doubt he, the practitioner, would be languishing in ignorance as in times past, as shown by the history of the advancement of science and medicine.

Perhaps a more definite understanding can be reached as to his importance in the world of medical science, when the statement is repeated from the mouths of several of our most eminent authorities, to the effect that there have been more discoveries made within the past thirty years in one field of labor in medicine, namely, that of bacteriology, than had been made previous to that time in over 3,000 years, and who give practically all of the credit to the laboratory men as a crown for their success after having given years of tireless energy, vigilance, patience and devotion to that branch of science. True that some credit is due the practitioner for his having introduced it to the world at large and for ascertaining just how valuable the agent or method is that is being offered for consideration at the hands of the world by the discoverer. And by such comparisons it can be readily seen by the close observant how the two branches of

efforts in medicine coalesce or become intimately associated one with the other.

It is the condition wherein some of the practitioners have allowed themselves to stray that has prompted me to write this paper, and if it has the power or tendency to cause them to wake up to their responsibilities as members of a profession and the duty they owe themselves, also the service and duty they owe their clients, which can only be rendered by men who have the proper conception of laborator work and science, I will feel that my feeble efforts have not been in vain.

First, I will endeavor to deal with the microscope, its development and aid both to the laboratory man and practitioner.

The existence of living plants or animals smaller than can be seen by the unaided eye was conjectured by several of the Greek philosophers and physicians, who used such theories in their speculations on the origin and cause of disease. Before the discovery of the microscope such speculations were without any basis in fact. Leeuwenhoek between the years of 1632 and 1723 observed quite a variety of natural objects by means of the somewhat crude lenses of his own manufacture, and which proved on closer examination to be micro-organisms, some being motile and others motionless; all were found in the tartar from teeth and in various decaying organic materials.

History teaches us that his subsequent correspondence with the Royal Society of London and the figures published in after years, leaves us without any doubt but that he actually observed bacteria.

Each step in the efficiency of the microscope was followed by an advance in our knowledge of the micro-organisms, although, no doubt, speculations frequently outran the ability to see clearly.

The compound microscope has proven to be indispensable in the study of these minute forms of life. Since the introduction of this instrument, the degree of magnification, the clearness of definition and the mechanic arrangements for accurate focusing have been gradually improved until at the present time the homo-

geneous oil immersion objective, the compensating ocular and Abbe condenser are in constant use in the laboratory and enable us to secure readily magnification to 1,500 diameters or more.

History has shown that in the last several decades there has been little increase in magnification due to two principal reasons. The greater the magnification the more convex and consequently the smaller must be the lenses used in the objectives and more difficult becomes their grinding and adjustment. Furthermore, the physicist tells us that a clear view with determination of the size and shape of microscopic objects cannot be obtained when the objects examined are smaller than one-half the wave length of the rays of light in which they are examined.

There is thus a seemingly insurmountable barrier set to an indefinite increase in magnification. A recent advance has been made through the development of the ultra-microscope, which, I hope, will do away with that term given when you are asked to give the specific cause of a given disease and of which we are all so familiar (to wit): It is caused either by the ultra-microscopic organism or a filterable virus, as in the case of hog cholera, and, of course, covers a multitude of sins due to our lack of knowledge along that line.

The ultra-microscope has made visible objects much smaller than those which had been previously observed. A bright gleam of light from an arc or similar source is passed across the darkened field of the microscope and the light is reflected to the eye from any particles that may be in suspension. These objects are seen in the same manner that minute particles of dust are made visible in a bright ray of light that enters a darkened room. The use of the ultra-microscope has not as yet added many facts of value to our knowledge of the bacteria.

Leeuwenhoek, the first observer of bacteria, contributed very little to the knowledge of their essential nature. F. Muller in 1786 worked out a simple classification, but did not differentiate between bacteria and protozoa. To him we owe several of the group names applied to bacteria, such as *Bacillus*, *Vibrio* and *Spirillum*.

Ehrenberg, between the years of 1795 and 1875, with the improved microscope and lenses at his command, prepared the first logical classification of bacteria. He differentiated the true bacteria from the protozoa, and his arrangement is the basis for the classification used most extensively at present.

Between the years of 1828 and 1898 Cohn elaborated and modified Ehrenberg's classification. With the continued improvement in the microscope and laboratory technique, more careful studies of structure, form and relationship have been rendered possible, and many classifications and groupings for bacteria have been suggested.

The present classifications of bacteria is by Ungula and is a very complex one and which would require too much time and space to give it in detail here.

In ancient times and as far down as the Middle Ages it was generally held by the philosophers and scientists that living things, animals and plants could arise *de novo*.

Among the first observers that disproved this theory and created doubt in man's mind as to the validity of spontaneous generation, or the creating of life without life, or as known to-day as the Abiogenesis theory, was Francisco Redi, who carried on an experiment by covering meats with gauze to protect it from flies and found that maggots did not develop in it spontaneously, but instead arose from the eggs which the flies deposited on the screen. This formed a path of light and similar studies were carried on to a much larger degree and in consequence it was not long before the idea or belief of spontaneous generation of the higher forms of life was abandoned.

When the new improved microscope revealed the presence of myriads of micro-organisms in all decaying or putrefying materials, it was concluded that these organisms arose without progenitors of their own kind, but directly from the organic material of their surroundings..

Boiling at that time in history was believed to surely destroy all life, yet it was found by the scientific observers of that time that boiled decoctions would not always remain free from micro-

organisms. So, therefore, with these conditions present the spontaneous generation of these bacteria was opposed by some and supported vigorously by others of the best scientists of the time. So following this controversy experiments were carefully planned and a great variety of materials used, paving the way for the development later of the laboratory technique of the bacteriologist.

The value of various agents were therefore demonstrated in a short time, such as the antiseptic action of certain chemicals, sterilizing action of heat and the value of the cotton plug as a bacterial filter, were demonstrated. The theory of spontaneous generation was eventually overthrown and ceased to be a topic of contention about 1860. This was largely brought about by the efforts of Pasteur who, by a long series of ingenious experiments, overthrew the last defense of the supporters of the Abiogenesis theory. The dictum, "all life from life," is universally accepted at this time and the controversy has little but historic interest.

The causal relationship of micro-organisms to decay and particularly to fermentation was first definitely established by the work of this same ingenious laboratory man, Louis Pasteur, who lived between the years 1822 and 1895.

He found that the production of alcohol and carbon dioxide from sugar was due to yeast, that milk soured because of the activity of bacteria, and that many of the familiar changes in organic substances were accomplished by micro-organisms. His conclusions were strenuously opposed as well as ridiculed by the great German chemist, Liebig.

Doubtless the necessity for meeting the attacks of the latter and of establishing his points beyond possibility of refutation led him to devise and develop many of the laboratory methods in common use at the present time.

As a result of the Pasteur work the fundamental importance of bacteria in the transformation of nitrogen and carbon compounds in nature, the disposal of waste, the purification of water,

the enriching of the soil and many changes in the manufacture of foods have been established.

History recites that as long ago as 1762 the causal relationship of disease was inaugurated by a laboratorian named Blensig, of Vienna. His theories were not generally accepted and consequently it was not until 1840 that the germ theory of disease was proposed by another scientist by the name of Henle, who never succeeded satisfactorily in establishing his belief, due to the lack of proper methods and to technique. In a few years it was the topic for discussion of several writers and numerous facts were adduced in its favor. The majority of the medical practitioners, however, placed little faith in it. About this time there was a theory advanced to meet the argument that certain organisms were always present, that said organisms were the result and not the cause of disease.

It was practically demonstrated by Davaine in 1863, by inoculation experiments, the causal relationship of a bacillus he found in the blood of diseased animals to anthrax. Two years later Pasteur proved the cause of a silkworm disease to be due to a protozoan parasite. A short time later Koch and Pasteur cultivated the anthrax organism in the laboratory and showed beyond doubt its relationship to the specific disease.

Within the next two decades the improved laboratory technique cleared up the cause of many diseases. The real beginning of bacteriologic science began with the discovery of the bacterium of tuberculosis by Koch in 1882. The knowledge of protozoa as a cause of disease lagged somewhat behind that of bacterial infections.

(Concluded in June Issue.)

A HOG'S habit of scratching itself against a post has led to the intervention of an automatic disinfector for animals, which are sprayed with a fluid as they rub against a supporting column.—
(New York World.)

BOB VEAL AND THE PUBLIC.*

BY PIERRE A. FISH, ITHACA, N. Y.

In the consideration of bob veal, the question of primary importance is whether or not it is unwholesome as a food. The law in prohibiting its sale encourages such a belief. Its purpose is to protect the consumer, but a just law must also consider the interests of the producer. With an increasing population and diminishing cattle supply, the time is not far distant when serious attention must be given to the conservation of the meat supply. With an increasing demand for pure food and a growing number of veterinarians as local inspectors for meat and milk, there should be some knowledge as to any definite nutritive value possessed by bob veal.

In those countries in which meat is most used as a food there has been the highest development of the livestock industry. The food question has, therefore, given a special impetus to the breeding and feeding of stock which will excel in the quality and flavor of the meat. In earlier years age was considered one of the important factors when it came time for slaughtering. At the beginning of the nineteenth century the standard of perfection in the United States and England was the steer of five or six years of age. Even in the early eighties a steer was not deemed mature or profitable enough for slaughter until four or five years old and was of large size and weight. Since 1891 finished steers more than three years of age have been the exception rather than the rule on the markets, while two-year-olds are gradually becoming the maximum. With the reduction in age came a reduction in size, which brought out as the butcher's ideal the "pony" beef, the animal weighing from 1,200 to 1,400 pounds when fully finished. "Pony" beef was eventually followed by "baby" beef—practically a pony steer finished at a younger age.

* The substance of this paper was presented at the Conference for Veterinarians at the New York State Veterinary College, Ithaca, N. Y., and at the Meeting of the Pennsylvania State Veterinary Medical Society, at Philadelphia, Pa.

Baby beef has been defined as a prime butchers' beast, thoroughly fattened and ripe for the block at from 12 to 24 months of age. Growth has been artificially promoted by continuous heavy feeding from birth, with the object of obtaining in the shortest time possible the maximum amount of well-matured beef. With the cattle put on the market at two or three years of age, the greater part of the life is devoted to natural growth, but the last four or six months of life is devoted to fattening. With the baby beef the fattening process is begun at birth and carried on coincidently with growth. Under such conditions it is necessary that all the food that can be transformed into beef must be supplied.

This reduction in the age of beef fit for slaughter, although not, perhaps, regulated by law, is referred to because there is also apparently a tendency to reduce the age at which veal may be put on the market. The Federal government formerly required that a calf must be four weeks of age in order to be marketable. This age has now been reduced to three weeks. The States of New Jersey and Pennsylvania have also adopted the three weeks age minimum. In other States the age ranges from four to six weeks.

In Germany the marketable age of veal sanctioned by law varies with the locality. In the greater number of districts the minimum age limit is placed at from eight to fourteen days, in others four weeks, and still others only a few days. In England the calf for the market must not be slaughtered less than two weeks of age, although it is said that the usual age for food purposes is five weeks.

The usual method for determining a bob veal before the carcass has been cut up is the unhealed condition of the umbilicus or navel; the distance the teeth have protruded from the gums is sometimes an aid; the amount and character of the fat about the kidneys—renal fat; in very young animals the fat is not so great in amount and is perhaps of softer consistency, having quite often a glandular appearance and usually of a brownish instead of a white color. Size and weight may be of indirect assistance.

but they are so variable that they cannot always be depended upon. In fact, all of the conditions mentioned are more or less variable and serve rather as clues than indisputable facts. The healing of the umbilicus may be delayed and the development of the teeth and renal fat retarded.

The writer has been unable to find any literature upon this subject, but has information that some twelve or fifteen years ago Professors S. H. Gage and V. A. Moore, of the New York State Veterinary College, investigated the matter from the histological side in an effort to determine some difference between the blood muscle fibres and structures of other organs of bob veal and older veal. No conclusive differences were found. A little later the writer attacked the problem in an endeavor to determine if there might not be a greater amount of glycogen present in the meat of the younger than in the older veal. The results were not promising and the work was abandoned. Two years ago the work was taken up again on the basis of the amount of water present in the tissue. It is a generally conceded fact that the flesh of young animals contains a greater percentage of water than does that of older ones. It is on this basis that the present work has been done. Three lines of experiments have been carried on: (1) The determination of the freezing point of the meat juices expressed from the tissues. The fewer the solids present the nearer will the freezing point come to that of distilled water, which contains no solids. (2) The determination of the specific gravity of the meat juice by means of the pyknometer. (3) The determination of the percentage of water present in a piece of meat of given weight. The weighing was repeated at intervals until a constant weight was obtained.

The parts used were from the loins and round. The beef and mature veal were purchased in the market. Experiments have been performed upon 16 bob calves and from 20 to 22 samples of market veal and the same number of beef. In all 115 determinations have been made of the freezing point of the various specimens and a lesser number of observations made upon the specific gravity of the muscle juice and the percentage of water

present. Of these three methods the freezing point seemed to be the most sensitive and reliable, and greater attention has been devoted to that. The freezing point of each sample was determined twice and the average of the two determinations was used in compiling the statistics. In comparing the averages of the three series of meats there is found to be a difference of from 0.10° to 0.11° between the bob veal up to 14 days of age and the market veal and beef. The results show much closer harmony between the market veal and beef than between the market veal and bob veal (less than two weeks of age).

In all three series of meats the averages showed that the freezing point of the round was depressed 0.01° to 0.02° lower than that of the loin. The curious fact was observed that in the bob veal up to five days of age this did not hold true. Up to this age the loin showed a lower freezing point than did the round, but from the age of five to fourteen days the reverse was the rule. The following table is a summary of the results obtained up to the present stage of the work:

	Bob Veal.		Market Veal.		Beef.	
	Loin.	Round.	Loin.	Round.	Loin.	Round.
Freezing Point	0.9572°	0.9716°	1.0625°	1.0822°	1.06195°	1.080°
Specific Gravity	1.0263	1.0281	1.0314	1.0342	1.0315	1.0328
Percentage of Water.....	78.87%	78.97%	75.87%	75.43%	73.66%	71.76%
(Five specimens)						

The investigation has been carried on with the idea of obtaining as definite data as possible for differentiating the tissues of the bob from older veal. Thus far in the work no calf older than 14 days has been used. Although the table shows that the averages of the experiments indicate quite a satisfactory line of demarcation between the younger bob and older veal, there are occasional individual exceptions, and the method as yet cannot, therefore, be declared infallible.

Although a method which would distinguish the tissues of the bob from that of the older veal with some degree of positiveness would undoubtedly be of great value in aiding the enforcement

of the law, the centre of the whole question is whether or not the tissues of bob veal are really unwholesome as a food and if the body functions are in any way disturbed thereby.

It is obvious that the only way to settle such a question is to eat bob veal. Dietetic experiments have, therefore, been carried along with the preceding portion of the investigation. Seven families, including over 20 individuals, have co-operated at various times in this portion of the work. The ages of these individuals ranged from two to sixty years. No report of any disturbance of the physiological functions was received. The statement that the flesh of bob veal has a laxative effect and induces diarrhoea has not been confirmed in a single instance throughout our work. The health in all cases was apparently normal; nor did any family refuse a second helping when another carcass became available.

In all veal there is a deficiency of fat as compared with beef. In bob veal this deficiency is naturally somewhat more pronounced because fat is a result of growth and age under proper nutritive conditions. In the use of bob veal this deficiency may be overcome to a considerable extent by cooking the veal with pork or other fat. The fact that persons are arrested at times for attempting to dispose of bob veal would indicate that the law is, without much doubt, sometimes evaded. Persons have undoubtedly eaten bob veal unwittingly who would have disdained to touch it if they had known in advance what it was. The investigation thus far has shown that the tissues of bob veal do possess a somewhat larger percentage of water than do those of mature veal. Is it logical to condemn the use of bob veal as a food on this ground, when we consider as delicacies certain fish, lobsters, oysters, etc., all of which possess a higher percentage of water than even bob veal, and bring a higher price in the market?

Is there a demand for bob veal? In all of the larger and many of the smaller cities of the East there is a considerable foreign population. Many of these persons have eaten bob veal in their native homes; they knew what they were eating and wanted

it; they would still eat it if it were available. From the standpoint of health and physical stamina they compare favorably with our native population who have not eaten this veal. Others, financially poor, upon whose tables meat seldom appears, would in time come to use it if reassured as to its wholesomeness. Bob veal should be marketed and, therefore, retailed at a lower rate than older veal.

The economic side of the question is of great importance to the general public, for it involves the conservation of the meat supply. Since 1890 the population of the continental United States has increased 41.7%, while that of cattle has increased only 30.8% during the same period. The statistics for the more recent years show a still greater divergence, although the cost has increased.

The honest farmer who carries on intensive dairying and does not find it profitable to raise all of his calves to maturity, or if the sex of the calf does not permit it to produce milk, must suffer considerable loss. The skin of the calf may perhaps be sold for a dollar or less, but the law prohibits the sale of the carcass for food purposes. Naturally, the farmer infers that the flesh is unwholesome. If the butcher may not be allowed to sell it to the public to eat, the farmer and his family are not likely to consider it a proper food for themselves. The result is that the carcass possessing a certain nutritive value, as far as proteids are concerned, is thrown away or cooked up and served to the swine or poultry for food. The waste in this respect must amount, in this State, to a number of thousand dollars. Much of this might be saved if the farmer were sufficiently aware of the nutritive value of the material and utilized it as food in his own family. In the country as a whole the aggregate must be large. Such a waste is serious in connection with a diminishing beef supply.

Diseased conditions are less commonly found in the young as compared with the older animals, and where meat inspection is not practiced the probability of eating diseased tissue is less likely than when older animals are consumed. If it came to the

question of eating healthy young tissue or diseased older tissue, there should be but one answer. According to the late Dr. Pearson, the Federal government spent \$3,000,000 in 1907 for meat inspection. At the present time the amount is probably not less than that sum. If the people of this country contribute the above amount, then New York State, with about one-tenth of the total population, contributes \$300,000 for this purpose, and only about one-half of the meat consumed is thus inspected by the Federal government. The half that is not inspected probably needs the inspection more than the half that is. Municipal or local inspection should by all means supplement that of the government.

The reduction of the killing age of beef has been referred to. Why not extend it to veal? As a first step in the conservation of the meat supply it would appear desirable to reduce the marketable age of bob veal to three weeks, as already sanctioned by the government and the State of Pennsylvania and New Jersey. There should be uniformity in the various States having laws upon this subject. The reduction of 25% in the age limit would check a large amount of waste in those States which require an age of four weeks or more. Under the present arrangement various absurd conditions may arise. A healthy calf three weeks of age is legally fit for food in the State of Pennsylvania; if carried across an invisible line into the State of New York it is condemned as unwholesome. What miraculous physiological changes must have occurred in the tissues of the animal while crossing the line. Natural law is apparently subsidiary to State law.

In time, as the conservation of the meat supply becomes more imperative, the age may be reduced to one or two weeks, as in the case of the greater portion of Germany. Certainly the Germans may be regarded as holding their own in health and stamina, although they consume a large amount of what would be classed in this country as bob veal.

Another step in checking this waste and safeguarding the supply would be to legalize the sale of bob veal as such. To substitute it for mature veal would be illegal, but since there is

a demand for it, with the prospects of future growth, why not supply it plainly labeled to those who may desire it? While it might not entirely check, it would undoubtedly very much reduce the attempts to substitute for older veal.

As to the charges of unwholesomeness and injurious effects upon the human system, it would appear that the burden of proof should rest upon those who make them. Our own investigation, with the co-operation of more than twenty persons, including the tender age of childhood and advanced maturity, do not confirm them, but rather indicate that the flesh of bob-veal has a definite nutritive value and appears in no way to interfere with the normal physiological functions of the human body.

OTTAWA DAIRY STANDS BY VETERINARIANS.—Poor milk may “look just as good” as Ottawa Dairy Milk. Remember, however, that the Ottawa Dairy never buys a drop of milk from a producer until he furnishes a veterinary surgeon’s certificate declaring the health of his herd.—(*The Evening Citizen*, Ottawa.)

ON page 216 of this issue of the REVIEW will be found a most interesting case report from the pen of Dr. A. W. Whitehouse, of Boulder, Colorado; and we are sure that his brothers in the profession will appreciate the report, not only because of the rarity of the condition described, but also because of the hardship that the doctor was willing to suffer for the cause. Without the author’s permission, or knowledge, we reproduce his letter of transmittal, and trust that it will not merit his disapproval:

“Boulder, Colorado, March 14, 1912.
Editor AMERICAN VETERINARY REVIEW, New York, N. Y.

Enclosed please find a case report. I extremely regret the scantiness of the autopsy, but there is not only a limit to endurance, but also to one’s natural intelligence in a driving snow-storm. The mind does not work as it does under conditions of reasonable comfort. Perhaps you could dig up some similar cases out of your files. I failed to find any.

Yours truly,

A. W. Whitehouse, D. V. S.”

AZOTURIA.*

BY W. B. ROBINSON, D.V.M., MT. STERLING, KY.

The subject selected for me to discuss before this meeting is a puzzle and one that has never been solved, a disease known to the profession as azoturia. This puzzle has for years and years baffled the most ardent attempts of scientific investigations. The more research we make, the more we study the nature and cause of this disease, the deeper we are driven into this complex mystery.

Azoturia is an acute disease of the horse, characterized by an arrest of locomotion caused by paralysis, generally of the posterior limbs, together with a morbid change in the character of the urine.

Etiology.—As to the direct cause I will not enter into a discussion, but the accessory cause is a hypernitrogenous condition of the system, and I believe leading to autotoxemia.

It is seen only in plethoric animals, well fed and on exercise after a period of rest.

The principal morbid changes are destruction of the red blood cells, freeing of hæmoglobin and hemorrhage into the larger muscles, as gluteal, crural and pectoral. They become hard, firm and fixed, losing their transverse striations. The urine varies from red to black and is often thick, due to the broken-down constituents of the blood.

Symptoms.—This disease is usually easily diagnosed, though sometimes it is very obscure. I will try to outline the typical symptoms.

On leaving the stable, after a few days' rest, the horse is full

* Presented at Kentucky Veterinary Medical Association, February 28-29, 1912.

of play, jumping and scaring at objects he ordinarily would not observe. The driver will often remark that the horse is "feeling his oats." After going one, two or three miles he begins to check-up—drive sluggishly, stumble, break out in a sweat, sway from side to side and suddenly stop. The owner may strike him and he may start off and go very well for a short distance and then stop again, looking round as though suffering abdominal pain. The owner may try to lead or drive him, but he will move or tramp with his anterior limbs, while his posterior limbs stand stiff, rigid and trembling, as if his feet were glued to the ground, and when forced to move he will go down, making a few efforts to rise, but falling. He may become delirious and uncontrollable, dragging and bruising himself against the ground.

Or he may drive along and suddenly go lame for a short distance, as though he had interfered. Then apparently he recovers, but soon the lameness reappears. The owner may suspect the picking up of a nail and may thoroughly examine the foot, but finding nothing, he places the foot down and steps back to make a careful inspection of the animal; then he sees the quivering muscles in the region of the flank, with a profuse sweating, the horse looking around at his side with an expression denoting distress, nostrils dilated and congested and respiration rapid. The driver immediately becomes cognizant of the precarious condition and tries to force him on to the nearest barn or to some place where medical aid may be secured; consequently the horse goes down, whereas if a veterinarian had been called to him he might have been on the road to recovery by the time aid reached him. I try to teach my clients the importance of stopping a horse as soon as the slightest symptoms are detected. If they chance to be crossing a railroad track they should even stop and *flag* the *train*, should one be approaching.

Differential Diagnosis.—With the previous history and the present condition of the horse known to us, we are usually able to recognize this disease, but we are not always able to get the history, as the driver may know nothing of the management and keep of the horse, as, for instance, a livery horse.

Slight, or even severe, cases may be confounded with other diseases or accidents. For instance, a light case may be mistaken for colic, or a horse may come in lame from an injury to the elbow or stifle showing some symptom of azoturia. In severe cases there are a few conditions which may often mislead us. A horse that is not in the habit of lying down while in the stable may suddenly fall in the road or on the street, making a number of unsuccessful efforts to rise. Usually, after lying an hour or two and resting, he will be able to rise and walk home, or even go to work.

Another condition that may be confused with azoturia is a fracture of the pelvis or of the lumbar vertebræ. He will go down suddenly, unable to rise, exhibits great pain, resembling a severe case of this disease.

There is still another condition, *i. e.*, thrombosis of the posterior aorta and its branches. A horse may go down very much as if with azoturia, unable to rise for a while, but an examination per rectum will usually reveal the trouble.

In my experience I have seen but one case of azoturia in a mule, if that was azoturia. While discussing the differential diagnosis, I will report this peculiar case. On April 10 I was hurriedly called to Mr. George Anderson's farm, about three miles distance from my home town, Mr. Anderson saying that he had a very sick mule and asked me to come immediately. When I appeared on the scene I found a nice, fat, 16-hand, 5-year-old mare mule standing in a shed and with posterior limbs in a condition absolutely rigid. Mr. Anderson informed me that his hired man had hooked his team of mules, of which the mule in question was one, to a slide, had gone to a field about a quarter of a mile distant to haul feed. The men reported that when starting the mule apparently was feeling fine, but she soon became sluggish, knuckling in the posterior fetlock, then breaking out in a sweat. They had by this time reached the first shock of corn, after loading which they attempted to start the team, but this mule refused to move. They removed the gears from her and then with considerable difficulty and taking a few steps at a

time succeeded in getting her back to the barn. I catheterized her and found the urine to be coffee-colored and thick. I was surprised to find a case of azoturia in a mule, but was more surprised when the owner informed me that he had used the mule for feeding every day, that she was turned in a three-acre lot during the day, being stabled only at night.

I then gave her an aloetic physic ball and diuretic of fluid ext. of corn silk (oz. $1\frac{1}{2}$) and left, telling Mr. Anderson to call me at 4 o'clock that afternoon. He called at the time appointed, saying the mule was all right, was in the lot biting and playing with her mate. In about three weeks the same condition recurred under the same circumstances. The mule was treated and recovered as before. After a lapse of about two weeks more, early one morning this mule and her mate were started to town to be shod. When they had gone two miles she began to show symptoms of the same old trouble. The man in charge of them happened to be a newly hired hand and forced her on to the outskirts of town and got her into a stable. As soon as possible I was called and found the same mule in the same condition, only worse. She was looking round at her side and exhibiting much pain. As before I catheterized her, gave her an aloetic physic ball, one and one-half oz. fld. ext. corn silk, and arecoline 1 gr. hypodermically. In from 20 to 30 minutes she had two or three evacuations of the bowels and seemed to be relieved of pain. Leaving her in charge of the attendant, I left and returned at 3 p. m. and found an almost complete recovery. I gave her corn silk (1 oz.) and left her till morning, when I found her entirely recovered. The owner sold this mule to a horse trader, conditions being fully explained, consequently I have since lost sight of this case.

Sequelæ.—The most common sequelæ of azoturia is a paralytic and atrophic condition of the muscles. No immunity is gained by an animal having once passed through this disease, but, on the contrary, there is a predisposition to further attacks.

Treatment.—As in tetanus, I think almost every drug in the pharmacopeia has been used in azoturia, from Genesis to Reve-

lation, or from astringents to laxatives. I believe in eliminative treatment. We know that the eating of rich food, together with rest, are the pre-eminent factors in the production of this disease; then why not eliminate the contents of the bowels and stop the adding of fuel to the already flaming fire? On the other hand, there is a large amount of the broken-down tissues of the blood, which are no longer an advantage, but a disadvantage to the mechanism of the animal; then why not eliminate these?

We should be very cautious as to the diuretics given, for we often have nephritis following this disease. Where diuretics are given for a period of several days they should be mild, soothing and non-irritating.

I will now outline my treatment in azoturia. In mild cases I first catheterize the animal, give from 1 to 1½ oz. of fld. ext. corn silk, and aloetic physic ball, from 1 to 1½ gr. arecoline, hypodermically. This is usually sufficient in light cases. In severe cases and where the patient is down, he should be put into a large box stall, allowing plenty of room in which to turn the patient from side to side. There should be plenty of bedding, to prevent decubitus or injuries in delirious conditions. Draw the urine, administer an aloetic physic bolus or one qt. linseed oil, from 1 to 1½ gr. arecoline, hypodermically; fluid extract corn silk, 1½ oz., with fld. ext. colchicum, 1 dr., and fld. ext. nux vomica, 1 dr.

Where delirium is present I give fld. ext. cannabis indicæ with fld. ext. hyoscyamus, ½ oz. each, to be repeated every four hours until animal is quieted. In extreme conditions I give orally 1 oz. chloral hydrate in capsules. I also strongly advise the use of hot applications over the affected muscles. This is probably best done by pouring hot water over oats. After draining off the water, fill sacks half full and spread them over the affected region, covering with thick blankets. This should be repeated about every half hour. These hot applications should be continued from twelve to fifteen hours. The animal should then be vigorously rubbed with cloths until thoroughly dry, should be well blanketed and turned from side to side every three or four hours. The mixture I leave to be given is as follows:

Fld. ext. corn silk.....oz. XIII.

Fld. ext. nux vomica.....oz. I.

Fld. ext. colchicum.....oz. II.

M. Sig.—Give one ounce every six hours.

I find corn silk to be the ideal diuretic in this condition, as it is mild, soothing, non-irritating, invariable in its action, excreting the solid as well as the liquid portions of the urine. I think nux vomica is also indicated because it exalts all the functions of the spinal cord, viz., reflex, motor, vaso-motor and sensory, the latter being the last affected. It also increases secretion and peristalsis.

My reason for giving colchicum is that it increases all secretions; it stimulates secretion of the stomach, intestines, liver, kidneys and skin. To sum up its action, it is an alternative emetic, diuretic, diaphoretic and hepatic stimulant.

MR. E. JACKSON writes under date of April 16, 1912: The B. A. I. Veterinary Inspectors' Association of South Omaha held their regular monthly meeting on the 15th instant. Dr. D. F. Stouffer read an interesting paper on "Peculiar Cases for the Final Inspector." This paper brought out an interesting discussion in which many of the veterinarians took part. The Association elected officers for the ensuing year. Dr. G. A. Kay was elected president, Dr. J. G. Beattie as vice-president, and Mr. E. Jackson as secretary-treasurer.

THE following clipping from the *Rider and Driver* describes a striking example of Arab endurance: "HORSE COVERS 84 MILES IN 7 HOURS: Mr. Wilfrid Blunt was in Constantinople, where he met Halim, the owner of the Arab horse which won the eighty-four mile race against an English mare in Egypt in 1864. The Arab was a bay from the Anazeh; the English mare, named Alabama, belonged to a syndicate. The race was from Suez to Cairo, and the Arab covered the eighty-four miles in seven hours fifty minutes, coming in alone. Alabama stopped after traveling about sixty miles. She was stopped to receive some gruel, but after taking it she could not move. Halim told Mr. Blunt that he once rode one of his Arabs, at trot and canter, for twenty-four hours and another for eighteen hours on end."

VETERINARY PRACTICE ON THE RANGES OF TEXAS.*

BY JAMES HARRISON, KALAMAZOO, MICH.

While the fundamental principle of the practice of veterinary medicine throughout the universe may be the same, yet its mode of application is vastly different in different countries and different states.

I found on going to Texas that the practice of veterinary medicine and surgery on the ranges of that state and New Mexico, Colorado, Kansas, and Oklahoma, was quite different to what it is here (as I was located in the northwestern corner of Texas, and consequently a corner of each of the other states came within what might be termed my legitimate territory), although a veterinarian's territory extends in that part of the country to wherever he is called, and that may be from his own office a hundred miles distant or even more. Twenty-five, thirty-five or even fifty-mile trips are of very common occurrence. These trips are usually by rail or automobile, though in the former case you would be met at the station and driven out five, ten or fifteen miles or whatever distance it was, and it became necessary for you to stay there a day or two sometimes until your patient showed some symptoms of improvement or otherwise. You can readily see that you would have to carry a small-sized drug store along with you if you expected to get favorable results, and very frequently the disease would have such a start that it would prove fatal anyway. However, I was usually prepared for any emergency, as I always had in pockets full of alkaloids of the Abbott Alkaloidal or P. D. variety, and my trusty hypodermic was never absent from my pocket except when in active service. Then, again, when you went to one ranch there was usually something to do on the next ranch, which might be five or ten miles distant. There would be some dental work, some castrating, frequently ridglings which the cowboy or

* Read before the Mich. Vet. Med. Ass'n, Feb., 1912.

rancher was compelled to pass up (for a great many of them do their own castrating). A few dead ones did not make much difference, but this condition is changing very fast. It was only a few years ago when the ranchman was compelled to do his own veterinary work if there was any done. As a veterinarian could not be found within hundreds of miles, consequently, if a horse took sick, he lived or died just as nature willed—and, as I said before, a few dead ones cut no figure; but that was at a time when horses, mostly of the broncho type, were worth from five to twenty-five dollars a head, but things have changed in the last few years; horses are a good price, and the ranchman has found out that in order to get the top price he must raise a different class of horses. The broncho is all right for the saddle, makes an A1 cow horse, and the proper thing to round up his cattle, but he will not sell on the market; consequently, they are buying the best type of Percheron, Clyde, Belgium or coach stud that they can find and turning in with their best mares. Then, again, people going from the North and Middle West States usually take good horses with them and, if mares, they usually raise a colt or two, although most of them taken from the North or Middle West die within a year or two, or a few years at most. But I am wandering from the subject.

There are some diseases in the Southwest that we of the Middle West States rarely come in contact with, such as loco poisoning. The word "loco," taken from the Spanish, meaning crazy, has been applied for a great many years to a disease of stock and sheep in the semi-arid region of the West. The name loco weed has been applied to a large number of plants, but the *Astragalus lamberti* and *Astragalus mollissimus* are the principal ones which poison horses, sheep and cattle; the latter, however, seldom poisons cattle because they very rarely eat it.

I had considerable experience with this disease, but time and space will not permit me to enter into a full discussion of it, as that would make a lengthy paper of itself. The treatment, however, consists of strychnine for cattle, Fowler's solution for horses; they must be taken from the pasture so that they cannot

eat the weed and must be fed on good, nutritious food—food with laxative properties; sulphate of magnesium to correct the constipation, which is always present among locoed animals.

Blackleg, or symptomatic anthrax in cattle, is another disease which I had a good deal of experience with, mostly in Texas and New Mexico. This is a disease which seems to prevail to an even greater extent in the extreme West—in the states of Washington, Montana, Oregon, Idaho, Utah, California and Arizona. It affects young animals, those between the ages of six months and two years—in fact it does not very often, if ever, affect an animal over two years old. There are certain pastures which seem to be impregnated with the bacillus and in which the disease appears regularly, spring and fall. *Symptoms:* The first thing the ranchman notices is that there is one or more of the herd are not feeding with the rest of the herd, appear dull and dumpy, lose all appetite and rumination ceases; are stiff and lame, perhaps, and the next thing he finds them laying dead on some part of the range.

Treatment is preventive only, and that by vaccination with blackleg vaccine. I will not attempt to describe the mode of making or the different forms in which the vaccine is made, as I am simply giving you my experience in the Southwest.

After preparing the vaccine and hypodermic and getting everything in readiness, the cattle are driven into the corral from one pen to another until the shute is reached, which holds five or six, one behind the other. The syringe is loaded with five doses and injected, one dose into each, under the skin in front of the shoulder. One man can vaccinate anywhere from five to eight hundred head a day if there are men enough to get them into the shutes.

One great difficulty in the prevention of blackleg is that so many of the ranchmen cannot afford to lay out of the use of their pasture for two or three years to have it burned off, and that is one of the most effective ways of preventing the disease.

Cattle tick and sheep mite are two other diseases which are uncommon in Michigan; these diseases, however, do not come

under the general practitioner's treatment, as they are looked after by the Federal inspector, who superintends the dipping of these animals when they are transported from one place to another. Stomach staggers was another disease which I had considerable trouble with and a disease which was very frequently mistaken for encephalitis, meningitis, and cerebritis, etc., and I do not think there was any mistake in their being some brain affection, but it was due to the impacted state of the stomach; this impaction usually occurring in the spring when the feed was scarce and they were compelled to pick up whatever dead grasses or other roughage they could find. The result was indigestion, constipation and impaction. The treatment ordinarily used in this state did not seem to be effective, such as aloes, oils with nerve tonics, etc., but repeated doses of glauber salts or magnesium sulphate in pound doses given every six or twelve hours for sometimes four or five days, before you would get any action from the bowels. Nux vomica, digitalis, aromatic spirits of ammonia, and alcohol given every two to four hours, etc. Altogether, the treatment of different diseases in the Southwest seemed to be more effective under a different line of treatment to what we are accustomed to here.

Shortly after going to Texas, I was appointed Inspector of the Cattle Sanitary Board, and instructed to let nothing pass over the border from that side into New Mexico without inspection for the following diseases: Glanders, farcy, *maladie du coit*, southern cattle fever or tick fever (Texas fever), actinomycosis, rinderpest, foot-and-mouth disease, contagious keratitis, scabies, and tuberculosis (certified certificate showing record of tuberculin test must accompany cattle intended for dairy and breeding purposes); Rosefelt and Clay counties being at that time under quarantine for glanders, and during the time I was there had a good deal of experience testing cattle for tuberculosis.

The Southwest is not a place where the veterinarian who has any kind of a practice here at all wants to go unless he goes into the Federal service; and the B. A. I. is in need of a great

many men which they do not seem to be able to get, and I would advise the young man to go into the Government service. There is a great deal more that I might write on this subject, but I have already written at length and in a wandering style and hope you may derive some benefit from it.

THE HORSE AN ARISTOCRAT: Representatives of *The Rider and Driver* have reported in these columns from time to time how the fashionable folk of London, Paris, Berlin, and other European cities have returned to the use of the horse for social functions, pleasure driving and riding. All the crowned heads and court officials and the nobility have adhered to the horse as a mark of distinction from the less discriminating crowd of people, and their example has been followed by persons of aristocratic preferment. It does not follow, of course, that these personages have discarded the automobile; both horses and machines are used in the same way that clothing is worn appropriately to occasion—mufti for undress or semi-sporting affairs, full dress for the higher social incidents and the traveling suit or country tweeds when going a distance or into the country. The horse is the full dress and pleasure medium, while the automobile serves as an affair of utility. Hyde Park in London and the Bois in Paris are thronged with horses. The bridle paths of Central Park are overcrowded and inadequate owing to the enormous popularity of equestrianism. Unfortunately for our driving pleasures, the automobile monopolizes the drives of the Central Park, and keeps the horses away. Were it not for this the "East Drive Parade," which was one of the great attractions of New York a few years ago, would be again in vogue. We shall hope to see it restored when the people realize that the Park drives are not necessary for automobiles. In a recent interview, published in the *New York Herald*, Mr. Alexander Gemmell, of Scotland, said: "The day is not far distant when fashionable New York will again be seen behind a pair of spanking horses, just as fashionable London now prefers to shop in Bond street and drive in the Park behind a pair of high steppers, rather than be unrecognized in a motor car, and so follow the fashion set by King George and Queen Mary, who will not allow their guests to attend the royal levees in motor vehicles."—(*Rider and Driver*.)

UTILIZING THE WORK OF OUR INTERNATIONAL COMMISSION ON CONTROL OF BOVINE TUBERCULOSIS.

BY M. H. REYNOLDS, ST. PAUL, MINN., SECRETARY INTERNATIONAL COMMISSION.

The writer has been constantly impressed with the feeling that the work of the International Commission on Control of Bovine Tuberculosis, and the work of such bodies as the British Royal Commission should be utilized to vastly greater effect than they will or can be in the absence of some special organized effort.

The commission has furnished certain educational material which has been accepted in this country as carefully stated and reliable, and this material is now freely available for distribution.

There is great need and magnificent opportunity for educational work everywhere. We have too many states that are without even adequate sanitary control legislation or organization. It is self-evident that effective work with bovine tuberculosis is impossible in such states.

What can the United States Association of Live Stock Sanitary Boards or any similar body do for this need—how utilize this opportunity? This is a question we ought to consider carefully during the coming year. Certainly no very effective work can be done without organization and plan and unselfish service by those interested in the task.

Whether this should be done by the American Veterinary Medical Association or the United States Association of Live Stock Sanitary Boards, may be a debatable question.

An active campaign on a large scale would naturally include educational work through agricultural colleges, farmers' institutes, veterinary schools, veterinary associations, agricultural press, etc.

There is an opportunity for some organized body to work through deans of agricultural colleges, and superintendents of farmers' institutes to secure special instruction on tuberculosis where this is not already provided for. The International Commission primer-bulletin recently issued could be used to exceedingly good advantage in such educational work.

It would not be difficult to secure a list including every county and state agricultural society and farmers' club in the stock-raising sections of the United States, and then call this bulletin and its availability to the attention of each secretary. There is available an educational factor of tremendous power in our agricultural press, and I think that, as a rule, editors would now be glad to co-operate in giving out reliable information from this primer-bulletin concerning tuberculosis. The same is true of live stock sanitary boards and similar officials, all of whom should certainly be willing to help. There is an opportunity for useful service in connection with legislative committees on agriculture; committees on dairy and live stock, etc., in legislatures where better legislation is under way or needed.

It would be an easy matter to secure lists of institutions giving university extension work in agriculture; lists of state farmers' institutes throughout the United States; lists of farmers' reading-course managers, etc.

Let me submit a single item to illustrate a possible easy and fruitful line of service. The Superintendent of our Minnesota State Farmers' Institute is in charge also of our university extension work. I arranged without the least difficulty for the distribution in Minnesota, through his office, of 5,000 Farmers' Bulletin No. 73 (U. S. Dept. Agr.), "Tuberculosis: A Plain Statement of Facts Regarding the Disease." This is the primer-bulletin previously referred to. It was prepared especially for farmers and others interested in live stock, by the International Commission on Control of Bovine Tuberculosis, and has now been issued in large editions by the United States and Canadian governments and a smaller edition by the American Veterinary Medical Association, and easily available.

Our several corps of Minnesota Institute workers recently gathered at the Minnesota Agricultural College just before starting out on the winter's campaign. In this meeting I discussed with them essential facts concerning tuberculosis, based on this primer. We planned for one worker in each corps to introduce the subject of tuberculosis and to present a few established, essential features which every stockman ought to know. During the meeting he was to collect names of farmers in attendance who were interested and who cared enough *to go to some little trouble* to get a copy. The supply for shipment is held at the Extension Division office and a copy mailed from there to each address, without a particle of further bother for me or my office help.

If one had the time, it would not be difficult to do similar work through every farmers' club, grange, etc., in the state.

I would suggest the advisability of carefully considering the wisdom on the part of either the American Veterinary Medical Association or the U. S. Live Stock Sanitary Association, of establishing something in the way of a bureau or committee for this task. This branch of our association would then have for its duty the task of keeping in touch with university extension work, farmers' institute work, the agricultural press, farmers' short courses in agricultural colleges, and in touch with legislative affairs in states where better legislation is sadly needed.

There is no limit to the amount of work of this kind that could be done and which, in the course of some years, would surely yield results well worth while. Certainly no one who is familiar with this kind of work would expect rapid results. But, on the other hand, patient, well directed, long-continued work could not fail of big results.

In any large social service we need to draw lines between Utopian social service and scientific social service. One is based on some fellow's dream of an ideal, and desires to force sudden change from the actual to that dreamed-of ideal. Utopian social service does not rest on tried principles or first-hand knowledge of men and conditions. Scientific social service begins with men and conditions as they are. It builds up and grows out the

actual. In any effective anti-tuberculosis work we must take men and laws, stables and herds, as they are and work for gradual improvement.

Improvement of the man must always precede the improvement of herd, stable, or legislation. Plainly, therefore, best utilization of the work of the International Commission, the British Royal Commission, or any similar body, sums up as an organized, widespread movement for popular interest, and then education.

The extent of our commission's usefulness will vary directly with the number of people reached and helped.

What further can our great veterinary and our live stock sanitary organizations do to best utilize the work of our international commission is one of the questions before us.

OHIO STATE VETERINARY MEDICAL ASSOCIATION YEAR BOOK is the title of a neat little volume in green cloth binding, compiled by President Louis P. Cook, and published by authority of the Ohio State Veterinary Medical Association. Following the custom of the American Veterinary Medical Association in publishing the frontispiece of officers (by courtesy of AMERICAN VETERINARY REVIEW), the officers of the O. S. V. M. A. form a very pleasing group as the frontispiece of the year book. The book contains, in addition to officers, committees, constitution, by-laws, etc., laws regulating practice, names and addresses of all persons granted certificates by the state board, graduates and legally qualified veterinarians by counties and by colleges, veterinary inspectors of the B. A. I. in Ohio, with places and dates of graduation, names and addresses of members of the state board, the minutes of the meeting held at Columbus in January, and a number of the interesting papers presented. Altogether, it is an interesting and valuable little book to Ohio veterinarians, and Dr. Cook deserves credit, not only for the quality of the work represented in it, but for the promptness in which he presented it to the members of the association.

SERUM PREVENTIVE TREATMENT OF CATARRHAL FEVER IN HORSES.*

BY JOHN T. SHANNON, V.S., LEXINGTON, KY.

Catarrhal fever, influenza, stockyard fever or shipping fever is a highly contagious and infectious febrile disease, characterized by an elevation in temperature and a catarrhal condition of some mucous membrane of the body.

It is a disease of the horse, mule and ass. All horses are susceptible, especially the younger animal. Catarrhal fever is a term used to include a variety of symptoms. This disease is not unlike la grippe in man. It is not a new disease, but, on the other hand, very old—1299 A. D.

At first there is an elevation of temperature and increased pulse, but as the disease advances it becomes localized. The cause has not exactly been determined, but, like all infectious diseases, there has been a large number of bacteriologic examinations conducted for the purpose of determining the cause. In 1892 one bacteriologist found a bacterium. The observer mentioned found the same organism in the blood and the purulent bronchial discharges. The specific organisms are bacilli very small in size, having the same diameter as the bacillus of mouse-septicæmia, but only about half as long. They are usually solitary, but may be united in chains of three or four elements. They stain rather poorly; sometimes these bacilli stain more deeply at the ends than at the middle, so that they appear not a little like diplococci. The bacillus is non-motile and, so far as is known, does not form spores. It cannot be positively proven that this bacillus is the cause of influenza, but from the fact that it can be found only in cases of influenza, as long as the purulent secretions last and then disappears, the discoverer was able

* Presented at Kentucky Veterinary Medical Association, February, 1912.

to demonstrate its presence in all cases of uncomplicated influenza.

As a result of these bacteriological researches they now manufacture an antitoxin for this disease. Like all febrile diseases, it has a period of incubation, which varies from a few days to a few weeks. One attack does not produce immunity.

Symptoms.—The symptoms of influenza vary considerably in intensity and form. This is due to the disease attacking different parts at different times. Any organ or organs may be attacked, and, as a matter of course, the leading symptoms depend upon and are governed by the organ most severely affected—the temperament of the animal, etc.

One of the first symptoms is dullness—languor. Slightest exertion causes fatigue; increased pulse, 48-72; temperature, 104-108; respiration, 30 to 60; constipation, congestion of the conjunctiva, legs cold. The duration depends entirely upon the severity of the attack—from a few days to weeks.

Treatment with Antitoxin.—The influenza antitoxin is not a specific for the disease, but in a great many cases it will arrest the disease and cause it to run a shorter course. The modes of administration: First, intravenously, followed by some danger. Second, subcutaneously; is for the best, as there is no danger. The only precaution necessary is to cleanse the parts when you make the injection with some reliable antiseptic solution. In the last few years I have used over six hundred doses as a preventive, even after the disease had appeared on the farm, with good results.

On one farm the manager would report a colt sick—not eating, dull and a temperature which would last a few days—and another animal would show the same symptoms. I inoculated all the animals, which amounted to seventy-five, with influenza antitoxin. They were sale animals, two years old. They were then shipped to New York City and sold, and only one animal contracted influenza. I have done this for the same farm three years in succession, all young animals, two years old, and they have not lost a single animal, and only took one out of the sale

that developed pneumonia at Buffalo. On another farm this winter I inoculated 108 yearlings. Not a single animal has been sick.

The Precautions.—On all containers there is a “time limit” when the antitoxin must be returned to maker. This is very important. Do not use old antitoxin or one that has become cloudy or with an odor.

The bad after-effects are due to old antitoxin and carelessness in administration.

The only bad effects that I have seen were inflammation of the lymphatics of the legs, which passed off in a few days. All animals which are intended for sale purposes should be inoculated a few days before shipment, as it makes them dull for the first four or five hours.

DR. JOHN G. RUTHERFORD THE RECIPIENT OF HIGH TRIBUTES OF APPRECIATION AND ESTEEM.—On March 25 the St. Andrew's Society, of Ottawa, Canada, paid a high tribute to their fellow member of this Scotch society, Dr. John G. Rutherford, retiring veterinary director-general and livestock commissioner of the Dominion of Canada, in the form of an address containing their expressions of appreciation of his worthiness, handsomely illuminated, in a leather case, and tied with Scotch plaid ribbons, which was read by the president of the society. Dr. Rutherford had been a member of St. Andrew's Society for ten years, and was much touched by the words contained in the address. “I am a Scotsman,” he said, in replying, “and there is something in the society of one's own countrymen that makes for the home feeling.” Also, on the eve of his retirement, March 28, a fitting tribute was paid to him in his office in the Canadian Building by the members of the staff of the health of animals and livestock branches in token of their regard and esteem. It was in the form of a beautifully illuminated address by the Rev. G. Bonsfield, bound in green vellum, referring to Dr. Rutherford's important and honorable service to the Dominion during his tenure of office (10 years). The presentation was made by Dr. G. Hilton, chief veterinary inspector, and was accompanied by a purse of gold, containing twelve hundred dollars.

VETERINARY INSPECTORS IN THE U. S. BUREAU OF ANIMAL INDUSTRY VERSUS THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

BY DR. ERNEST I. SMITH, U. S. DEPARTMENT OF AGRICULTURE, HUNTSVILLE,
ALA.

Some time ago I received a communication from one of the secretaries of the American Veterinary Medical Association requesting that I remit the necessary fee and join the association. The secretary was doing his duty, as every one of them should do, *i. e.*, increase the strength of his organization and have something to show every year for his efforts. Upon receiving the invitation, I replied as follows: "Dear Sir—Your kind invitation to join the A. V. M. A. at its next meeting has been received, and I thank you very much for it, but it appears to me that the association has a strong, sneaking desire for numbers, not active membership, and I would be one of the great number in the B. A. I. who could never attend, and, therefore, what would there be in it for me? Very respectfully. (Signed) E. I. Smith."

The closing word in the above letter may sound very egotistical and extremely selfish, but when it is applied to over eight hundred others it at once assumes a far different meaning. As far as I am concerned, I am delighted to know that I am eligible for membership to such a mighty scientific body, and hope to be able to join its ranks in the near future.

It is no doubt true that many inspectors in the B. A. I. belong to the A. V. M. A., and are satisfied to annually pay their dues and allow their names to rest in peace; but that is not the spirit which keeps such a society in operation and gives it the notoriety of being one of the foremost sanitary organizations in the world. Attendance and activity are the vital factors which give it life; but still there are a great many members who never answer to the calling of the roll and never profit by the extraordinary pro-

gram that is rendered; neither do they have an opportunity to express their views nor relate their experiences, which, if they did, might add something to the archives of scientific literature. The meaning involved in the bulk of this paragraph applies, largely, to the veterinary inspectors in the Bureau of Animal Industry.

It is absolutely certain that not every inspector in the B. A. I. could attend the A. V. M. A. at once; it can be readily seen that such a procedure would cripple the service and make a farce of all the achievements the department had previously accomplished, but there could be some plan devised by the bureau whereby a goodly representation could attend.

Veterinary inspectors in the United States Bureau of Animal Industry should form an organization, and at each station a sub-organization should exist. This should be recognized by the bureau, which, in turn, should grant authority to that body, through the inspector in charge, permitting them to select a specified number from the local force to represent them at the next meeting of the A. V. M. A. Would that not have a tendency to make the men more practical, constantly keep them alert to their duties and induce them to make a record of their observations, both in the abattoir and in the field service? It would in no way deprive the bureau of service nor compromise it in the least, but would tend to stronger co-operation and uniformity. The calibre of the men would enlarge and each would be in a new line of investigation, whether he was engaged in post-mortem service or otherwise. As a result of all of this, the membership of the American Veterinary Medical Association would be greatly increased and the personnel of the Bureau of Animal Industry would reach a much higher standard.

The A. V. M. A. recognized the services of all of the professional men in the B. A. I. and strongly manifested that recognition in the election of the chief of the B. A. I. to its highest office, the presidency. Such an action expressed much in bureau circles and was sanctioned by the majority as a wise selection and highly commendable. The choice was, indeed, meritorious, and

I hope that the presidency of the association may again seek a man from the bureau ranks. It may not have the honor in the future to elect the same chief of the bureau without repetition, but it is hoped that there may be other men in the department who will aspire for the office.

In a preceding paragraph I have suggested organization of the bureau veterinary inspectors, not for the purpose of demanding any particular privileges nor antagonizing any existing orders, but for the purpose of stimulating more individuality—notably, a knowledge of what is being done in other stations; the methods, names of the men, facts relating to transfers, and many other details of supreme importance. The final result would be a monthly publication confined to the working of the bureau only. Such a periodical of information would be, in my opinion, what the bureau would desire to disseminate among the employes if it were not for certain prohibitive measures in the way of public printing. Therefore, if the task were conducted by some of the employes, and the revenue from the magazine bore the expenses, a solution to a difficult problem would be happily reached. A self-sustaining organ of information among bureau employes would be one strenuous stride toward bureau perfection.

FURTHER APPROPRIATION TO MEET INDEMNITY CLAIMS: Several hundred farmers and others scattered all through the State will be pleased to learn that Governor Dix has approved of the bill appropriating \$200,000 for the payment of claims incurred by the State by reason of the condemnation and slaughter of glandered horses and tuberculous cows. Commissioner Huson reported to the Legislature on March 7th that there were then claims on file in his department aggregating \$194,000 with no funds to satisfy them. Many of these claims are more than six months old. Commissioner Huson, in anticipation of the signing of the bill, has had a number of clerks at work for the past two weeks preparing schedules for the payment of these claims, and it is hoped that all properly authenticated claims will be satisfied within thirty days' time.

AZOTURIA.

By A. B. ELLIS, D.V.S., LOS ANGELES, CAL.

I have read page after page written on azoturia and no version of it seems to agree with mine. This disease occurs usually in valuable horses, because it appears in well-fed horses put to work after a period of idleness. McFadyean's theory is that in a horse in good condition there are about 7,000,000 red blood corpuscles in a cubic centimeter of blood, and when the horse is taken out and exercised there is an increase of about 4,000,000 to a c.c., making a total of about 11,000,000. This increase of red corpuscles causes embolism in all the large arteries, in the gluteal region, in the crural region and just over the patella; hence we get the "woody" condition of these sets of muscles which we all know is present in cases of azoturia. This is also why we get the black coffee color in the urine; breaking down of the red blood corpuscles. In most cases that are down, we have a bilateral paralysis of the crural muscles. We know the muscles are not thick in this region, and we also know that the great sciatic nerve, the largest nerve in the body, leaves the pelvis in company with the gluteal nerves, through the great sciatic notch, and is directed downward along the posterior face of the femur. Near the stifle, it passes between the two portions of the gastrocnemius muscle. The crural muscles get the greater part of their nerve supply from the crural or anterior femoral nerve, as it is sometimes called. These nerves, passing through these thick, heavy muscles, cause pressure on the nerve and paralysis of the whole hind quarters.

Azoturia is never considered a nervous disease, but we know the patient is always greatly excited during one of these attacks. This, in my opinion, is due to inability to control himself; and I believe that here is one place where an anodyne is indicated. I won't attempt to outline any certain treatment, for I have had very poor success in cases that were down. I had one case

down seventeen days, and then got him up and he made a complete recovery in about six months, and went to work. When I first started in practice, I had ten or twelve cases before I got one down, and I thought my treatment was wonderful; but when I got one flat on his side, my treatment failed. I think I have had the best success with adrenaline chloride, in dram doses, and half an ounce of chloral hydrate diluted in about two ounces of water, three times daily. I always use eliminative treatment with this. I first give about a half grain of arecoline, hypodermatically, and follow it up with an aloetic ball. You will notice in most cases that you will find the horse has been overfed, and when he first comes down, there is first a chill, and later he breaks out in a sweat with colicky pains. This is why I think arecoline is indicated before anything else is given. It increases salivation and intestinal evacuation and helps to reduce plethora.

Before the aloetic ball has produced an action, I think it is a good practice to give another half grain of arecoline, say ten or twelve hours after you have given the physic ball; which will have a tendency to hasten the action of the purgative.

I sometimes give chloral hydrate in one ounce doses for the first couple of doses, to quiet the patient. I will also mention that I have very poor success with the use of slings. I have tried to sling them the day after the attack, only to get them up and find out they had no control of their hind extremities. I wait a few days until they show some sign of rising; in the meantime I keep hot fomentations over the crural muscles and catheterize once daily. I think sometimes slinging them every day only helps to diminish the strength of the already exhausted patient. Where you can get the animal to sit up and eat, and not lay flat on his side and pound himself all over the stall, the prognosis is more favorable. I am not writing this claiming to cure all cases of azoturia, for I know no treatment will do that; these are only my views; some of them I have picked up by reading different journals, others I have picked up in active practice.

REPORTS OF CASES.

MILIARY TUBERCULOSIS IN A DOG, WITH ULCERATIVE ENDOCARDITIS.

By A. SCHLESINGER, D.V.M., New York, N. Y.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

The patient, a white male bull terrier *three years old*, was admitted to the hospital February 12, 1912.

The history was as follows: The dog had been in perfect health until six months before—about the latter part of August or early in September of 1911. At this time the dog had a long swim of about three miles in Newark Bay. Immediately on emerging from the water he showed marked and painful dyspnea,

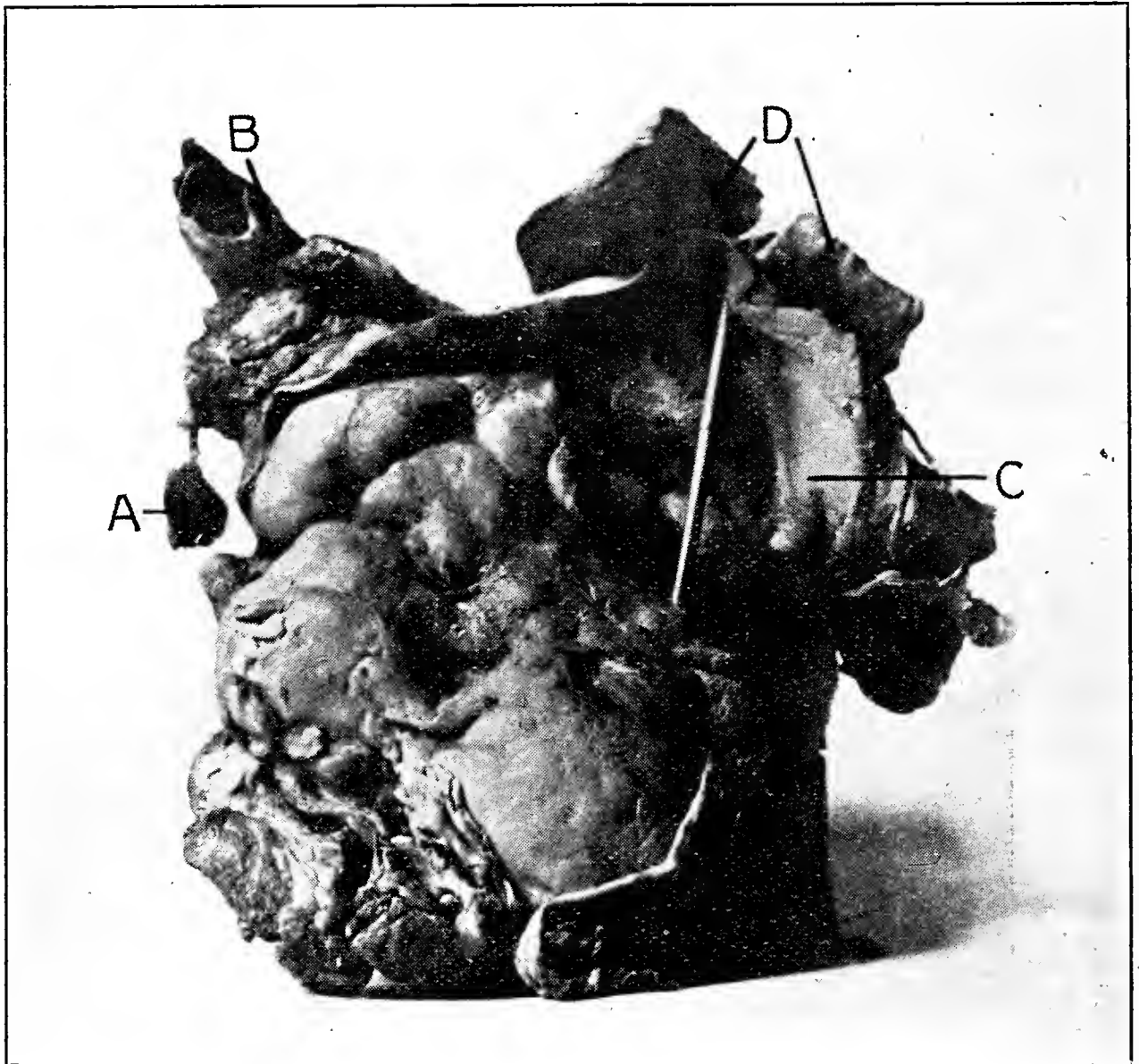


Picture of dog taken a few days prior to the swim referred to in article.

which was so severe during the night that the owner thought seriously of shooting him, but finally decided to wait until the next day. The next day the respiration was a little better and the dog began eating as usual. From this time he began losing flesh gradually, the ribs showing through the skin; the breathing was slightly dyspnoeic. About a month before entering the hospital the dog had been in a fight and had been violently stopped after much kicking and pounding. After this the loss of flesh

and strength was very rapid and the dyspnea severe. The appetite was ravenous during the entire period of failing health.

Symptoms—Temperature, 100° ; pulse, 110, irregular, weak; great anæmia of oral m.m. and conjunctiva, also of external and internal sides of ears; marked dyspnea, pendulant abdomen, slight constipation. Percussion of chest wall; dull sound all over. Percussion of abdomen; dull over right and left hypochon-



TUBERCULAR GRANULOMATA OF CARDIUM.

A. Cardiac Lymph Gland.
B. Aorta.

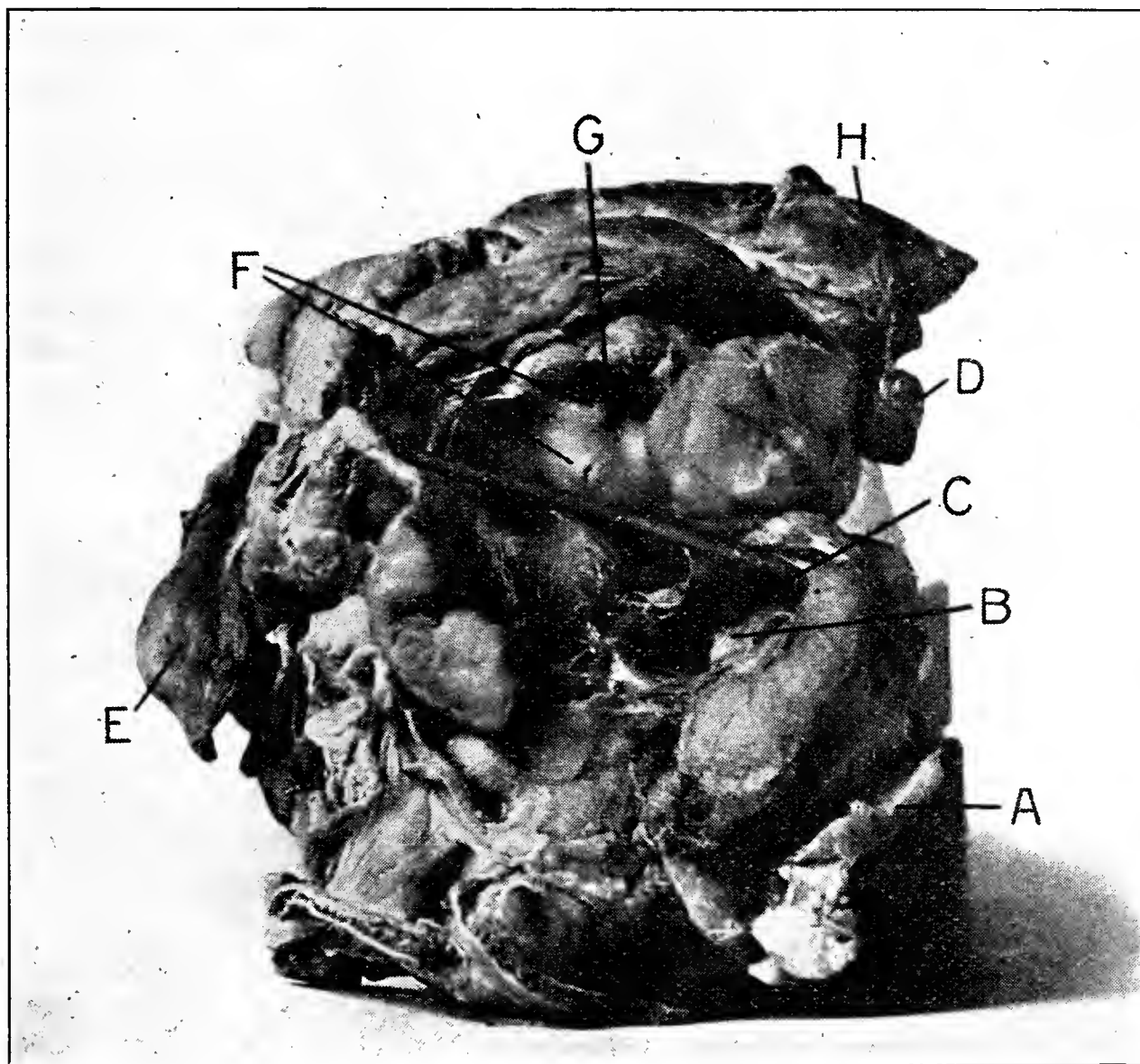
C. Pericardium.
D. Lung.

driac regions. Palpation of abdominal cavity showed enlarged organ, which was finally diagnosed as the liver, although the possibility of an enlarged spleen was thought of. A diagnosis of beginning ascites was made also.

Auscultation of thoracic cavity gave slight friction sounds. The heart sounds were loud and irregular, and the pounding of

the heart could be felt against the chest wall. There was an uncertain short purring bruit after the lub (first) sound of the heart. Considering the bruits and general loud, irregular sounds, also the enlarged abdominal organ which indicated infection of some kind, a diagnosis of ulcerative endocarditis was made, with

ULCERATIVE ENDOCARDITIS.
(Tubercular.)



VIEW OF RIGHT VENTRICLE AND AURICLE.

- | | |
|-----------------------------------|----------------------------------|
| A. Pericardium. | E. Lung. |
| B. Right Ventricle showing ulcer. | F. Right Auricle with ulcers. |
| C. Entrance of Vena Cava. | G. Entrance to Pulmonary Artery. |
| D. Cardiac Lymph Gland. | H. Aorta. |

probable insufficiency of the mitral valve. Also slight chronic pleurisy diagnosed, with slight hydrothorax.

At the slightest exertion, even such as lifting the dog on and off the table, he would gasp for breath and whine with pain.

Treatment—For the pain, 20 grains Sod. Br. 3 times daily for two days. This brought great relief. For anæmia, 10 grs. sugar of iron 3 times daily. *Food*—Plenty of raw and cooked meat three times a day, also milk morning and evening. The appetite was ravenous. For constipation, 10 gr. doses of cascara sagrada extract daily.

The dog was put into a cage and kept absolutely quiet for observation during one week, so that a further diagnosis might be attempted. A blood examination was made and difficulty was encountered in securing the blood. From the ears pricked in different places only sufficient blood was obtained for the smears for the differential leucocyte count. There was not blood enough for the numerical count and it coagulated very quickly and clogged the pipette. A tourniquet was applied to fore-limb above the humero-radial joint, and after the usual shaving, cleansing and disinfecting, an incision was made through the skin into the muscles of the antebrachium. Even then there oozed only a few drops of blood, not sufficient for the numerical count. The tourniquet was removed and then only a small stream of blood was obtained. This gives you an idea of the anæmic condition and poor circulation.

The numerical and differential blood counts follow:

Red cells, 4,404,000.

White cells, 5,100.

Differential white cell count:

Lymphocytes, 12 per cent.

Large mononuclear, 14 per cent.

Polymorphonuclear, 71 per cent.

Eosinophiles, 2 4/10 per cent.

Mast cells, 6/10 per cent.

The number of red cells are practically normal. The white cells are below normal in number as these vary normally from 7,500 to 11,000. This lessened number of white cells, called hypoleucocytosis or leucopenia, is found "in lessened function through anatomical destruction of considerable masses of functional tissue." But this did not aid in making a more definite diagnosis. The differential count, while not normal, was considered not sufficiently diagnostic of anything in particular. The temperature during the entire week of observation was normal. At the end of this time, as nothing could be done to help the dog, the owner consented to having him chloroformed, which was done.

Autopsy—The thoracic cavity showed a chronic injected condition of the mediastinal pleura with little hydrothorax. *Hydro-pericardium*. The pericardium distended and thickened, contained one pint of fluid. The cardium was hypertrophied. The ectocardium covered with many enlargements, varying in size up to a pigeon's egg. The light ventricle of the heart contained an elevated ulcer as large as a five-cent piece; the right auricle contained two similar elevated ulcers, but smaller. These ulcers were contiguous with the granulomata on the ectocardium, there being very little muscle structure at the base of the ulcers. The left auricle and ventricle exhibited no lesions, but in the left auricle, at the base of one of the mitro-valves, a fibrinous deposit as large as a pea was seen which probably caused the purring bruits. Half of the lobe of the left lung was indurated. The cardiac and bronchial lymph glands were enlarged, likewise the inferior cervical lymph glands. The liver was studded with numerous distinct spots, dull, light yellow in color, varying in size from a pinhead to the circumference of a pea. The liver was enlarged to twice its normal size. The kidneys showed similar spots. The spleen, pancreas, intestines and other organs were normal. A little fluid was found in the abdominal cavity.

The diagnosis of tuberculosis was established by Dr. Jas. Ewing, of the Cornell Medical College, who examined the tissue microscopically. A verbatim report of his results follows:

“The new tissue involving the heart is composed of diffuse granulomatous tissue. It contains polyhedral and spindle cells supported by a few fibrils, scanty blood vessels, and is infiltrated with numerous lymphocytes. While in most areas these elements are arranged diffusely, as in tuberculous tissue, in many foci they form miliary tubercles with small giant cells. In some places much of the tissue is made up of conglomerate tubercles of this sort.

“In the liver the very numerous small tubercles are composed of polyhedral cells, sometimes forming small giant cells, and mingled with many lymphocytes. There is very little necrosis in any of the lesions.

“The search for tubercle bacilli in the main mass and in the liver was not successful. Regarding the possible presence of the granular form of the tubercle bacillus it is impossible at present to offer a positive opinion. Three guinea pigs inoculated with material died three days later from the toxic effects of the injection.

" Cultures of the material on egg medium made by Dr. L'Esperance are negative. Nevertheless the diagnosis of tuberculosis seems warranted by the gross appearance of the lesions especially in the liver, and especially by the microscopical structure, which is identical with certain known forms of tuberculosis in which tubercle bacilli are very scanty."

Conclusion—The cause of the endocarditis seems primarily to have been tubercular infection; and the exhaustion brought on by the straining of the heart, due to the trying swim in Newark Bay, undoubtedly aggravated the condition by causing greater metastasis. The kicking and pounding, received in the fight spoken of, hastened the end. Although the dog was chloroformed, in my opinion he could not have lived longer than two weeks. It was hoped to establish the point of whether the infection was of human origin, but this, unfortunately, could not be done. It is interesting to note that the age of the dog was three years, as usually the endocarditis is found in older dogs.

The liver and kidneys were not preserved. They were not put into preserving fluid at first because the material was needed for inoculation, and later decomposition had already set in, so that they were not worth keeping.

I am indebted to Dr. J. G. M. Bullowa, a physician, who took a great interest in this case and aided me in making the diagnosis so far as possible. Neither Dr. Bullowa nor myself diagnosed the hydropericardium.

The picture of the bull terrier shows the fine condition the dog was in at a time when it was probably considerably infected. The picture was taken a few days before the swim already mentioned.

TREATMENT OF LUNG PLAGUE IN HORSES WITH SALVARSAN.*

By Dr. NEVERMANN, Berlin, Germany.

Incited thereto by several favorable reports published in the special journals in regard to the treatment of lung plague in horses with salvarsan, I instituted some researches with this remedy, having been authorized by the Ministers of Agriculture, etc., to use the material of the breeding studs at Gudwallen and Trakehnen. The salvarsan used was kindly supplied without cost by Professor Ehrlich.

* Reprint from the "Berliner Thierärztlichen Wochenschrift," 1912, No. 7

In Gudwallen, investigations were also made with Lorenz's serum and with tallianine, the results of which are also briefly given here. The results at this stud are given by the veterinarian in charge, Dr. Puschke, as follows:

The lung plague broke out among the stallions in the royal breeding stud at Gudwallen, July 9, 1911. The first to be attacked was a young stallion purchased in the spring, and the second followed in fourteen days. The total number attacked up to October 21 was 91, and one died August 11.

The stallion first attacked had a severe bilateral pleuro-pneumonia, and was treated exclusively with cold compresses to the chest. The disease pursued the normal course and in eight days the horse was free from fever. One week later he developed a tenosynovitis in both fore feet and was very lame. Since early in September he has been on the mend. Twelve stallions were also treated with the Lorenz lung plague streptococcus serum. Up to 450 c.c. serum was injected. The latter exerted no influence on the fever. In three animals the lungs remained sound, but in the others a slight pneumonia could be recognized.

With tallianine twelve stallions were treated. The quantity injected per animal was up to 130 c.c. The serum had no influence on the fever, which lasted on an average eight days. Only three animals developed pneumonia, and one of these died August 11 (see above).

There were treated with salvarsan sixty-five horses. In fifty-five a single injection of 3 grams was sufficient, and the animals were free from fever in five days at the outside. In ten animals a second injection was necessary—2 grams on the fifth day—and they were free from fever by the eighth day of the disease. There were no unpleasant collateral effects of salvarsan of any sort. In all the animals the lungs and heart remained sound. It is to be noted especially that these animals who received salvarsan made very quick recoveries.

An oil emulsion of salvarsan, joha, was applied in three cases. The first stallion had been treated already with tallianine and on the eighth day was almost free from fever. On the ninth day the temperature again rose, whereupon 7.5 c.c. joha (= 3 grams of salvarsan) were injected into the muscles of a hind leg. On the next day the temperature was normal. The second stallion received 7.5 c.c. twice but without influence on the fever. At the injection point arose a small, firm, tender swelling. The third stallion likewise received 7.5 c.c. joha. As this likewise

had no influence on the fever, the animal received on the fifth day an injection of 3 grams salvarsan and two days later was free from fever.

Among the work horses the first case of the plague appeared September 24, 1911. The animal was treated with 3 grams salvarsan and was well in three days. A second case ran its course with but little elevation of temperature. Further new cases have not developed.

In Trakehnen only five horses were first treated with salvarsan. The fall of temperature did not appear in so typical a fashion as in Gudwallen. This is to be explained, in the first place, by the fact that at Trakehnen salvarsan was used only in the severe cases which seemed to be of a threatening character. In one animal (No. 5) the disease had already advanced so far when salvarsan was given that the animal died a few hours later.

Inspector Fischer, of Trakehnen, who had carried out the treatment there, reported as follows:

The working mare "Panzerklinge," who had been given 2.0 gram salvarsan, showed no reaction. The temperature fell on the next day but a tenth of a degree, but the pulse, which had been miserable, small and frequent, improved during the subsequent days; the respiration was less frequent and the animal was stronger. As the temperature showed no further tendency to fall, nor the appetite to return, the animal received a second injection five days after the first. Two grams were given. No reaction followed. By night temperature had fallen about 1.5° C. The next day it rose a little but the general condition was much improved. The results at Trakehnen show that one injection is not enough in severe cases to bring down the fever. They will be continued and treatment will be instituted in mild cases and also as early as possible in the disease. The results appear to be worth publishing.

RUPTURE OF THE ABOMASUM.

By A. W. WHITEHOUSE, D.V.S., Boulder, Colorado.

The history and symptoms of this case are very scanty and the autopsy, as will be explained, was perfunctory, but the variety of the conditions seems to make it worth recording.

Gresswell ("Diseases and Disorders of the Ox," London, 1889) mentions the possibility of such condition, without enlarging on it. Friedberger and Frohner quote Harms as describing a

few cases of abomasal engorgement, without discussing rupture; other authors that I have access to are completely silent, and a tolerably extended search through the journals fails to reveal a case report.

On March 5 I was called on the telephone by the owner of the cow in question. He reported that she would neither eat nor drink and seemed uneasy. As she was his only cow and as he has a young child, he asked me to come and make a tuberculin test. I replied that the present symptoms were not likely to be due to tuberculosis, and explained that a tuberculin test on a single cow was both troublesome and expensive, offering to come and see what was wrong. He, however, did not think that she was ill enough to justify such a visit. I advised him to give $1\frac{1}{2}$ pounds of salt.

On March 12 he called me to his farm. He informed me that he had had a tuberculin test made by another practitioner without reaction.

Since March 4 she had practically eaten nothing and drunk very little. She had received $3\frac{1}{2}$ pounds epsom salts and one quart of linseed oil. Constipation had been complete till the night of March 11, when she had passed some hard horse-like balls, followed by scanty liquid faeces. This morning he had found her down and was unable to get her up, hence the call.

The cow was a dark Jersey of about 1,000 pounds, well nourished, seven years old, in milk for about a year and not pregnant. She was in a condition of collapse; lay on her chest, without much evidence of pain, and no power in the hindquarters; extremities, nose, mouth, ears, anus and vulva were cold. I could get no reading from anus or vulva with the thermometer shaken down to its low limit. To listen to the heart I stretched her on her right side, which caused pain; heart almost indistinguishable, at about 86. A little fluid faecal matter oozed from the flacid anus. Rumen doughy, but not distended.

Diagnosis very doubtful, the most probable being heart traumatism from the reticulum. I gave stimulants and left, predicting early death.

She died during the night of the 12th, and the autopsy, such as it was, took place at 9 a. m. on the 13th.

The body was already skinned and was lying on a field of snow about $2\frac{1}{2}$ feet deep. The temperature was about 15° F., with snow falling freely and a considerable wind, so that physical wretchedness must be my excuse for not exhaustively examining this very interesting case.

The body was placed right side uppermost, and on opening the peritoneal cavity many gallons of fæcal-stained fluid gushed forth. The great omentum appeared black and necrotic, with food contents between it and the abdominal wall. A large mass of dry food contents appeared outside the omentum on the abdominal floor and tracing these there was seen the abomasum still enormously distended, with its lower face stretched to bursting and three ruptures, one much the largest. The omasum and reticulum were also packed to distension, and dry, the contents of the rumen being dry, but not very great in volume. There were only two eightpenny nails and a small piece of wire in the reticulum and no injury to its wall. The intestines had been shielded to a very great extent from fæcal contents by the great omentum, but showed patches of inflammation and a gelatinous exudate into the rumen. The lungs looked normal, the pericardium, epicardium and endocardium showed suggillations, but no evidence of traumatism. The great omission that I made, and it is almost inexcusable, was in failing to examine the pylorus, so as to ascertain whether there was a mechanical cause for the condition. The cow, however, is reported as having been very greedy, and I am inclined to believe that she simply filled herself up to the point of rupture. Diligent inquiry fails to show any possible history of external violence.

The adhesions between the various stomachs, abdominal wall and omentum were extensive and firm, and it seems to me probable that the rupture must have occurred within a day or two after my first telephone call.

AZOTURIA IN WORK OXEN.

By W. M. BURSON, D.V.S., Professor of Veterinary Science, State College of Agriculture, Athens, Ga.

Recently I was called to investigate a mysterious disease of cattle in Jefferson County, Georgia. Some lumbermen had about thirty head of oxen in good condition which were used for hauling logs and lumber. On account of bad weather a short period of idleness occurred. All appeared to be well until after going to work, when two oxen went down with the ordinary symptoms of azoturia in the horse, and died in a few hours. Several others became lame and developed soreness of muscles of loins, hips, thighs and the extensor brachii. The muscles were hardened and surrounded by edematous material. In one case the animal

would not elevate the tail during defecation. Stocking of the hind limbs down to the hoofs was observed in two cases. The appetites had remained fairly good and there was no elevation of temperature in the mild cases. Muscular inco-ordination and staggering were to be seen.

One ox fractured the skull by striking the horn while attempting to rise and was killed. Post mortem showed degenerative nephritis, edematous myocitis, splenic engorgement and a tarry consistency of the blood, together with urine of high color.

These cattle were fed exclusively on cottonseed meal, with cottonseed hulls as roughage. The meals and hulls were mixed in large troughs, to which all the animals had access. The most voracious feeders were the ones that became affected.

In diagnosing these cases due consideration was given to such other diseases as might affect oxen.

Tick Fever.—No ticks were found. No elevation of temperature. These cattle were raised in the tick-infested locality.

Black Leg.—These were mature cattle and the swellings present contained no gas. Fever not present.

Anthrax.—No other affected animals in the locality. Evidence of contagion not present.

Digestive Disturbances.—No evidence except reduced appetite in the mild cases.

Unsound Food.—Dairy cows and fattening steers fed from the same source of supply remained healthy.

I have not been able to find this condition described as affecting oxen in America. Friedberger and Frohner describe it as affecting draft oxen in Germany. Perhaps the facts that our Northern States are the principal field of observation by American veterinary authors and the difference in the concentrates used as a ration for work oxen account for their failure to observe or describe the disease. In this connection it may be interesting to compare the protein contents of the concentrates fed to oxen. Henry gives them as follows: Corn, 10.5; corn and cob meal, 8.5; gluten feed, .24; bran, 15.4; middling, 15.6; oats, 11.8; oat feed, .16; linseed meal, 33.2; cottonseed meal, 42.3; pea meal, 20.2. We observe the extremely high protein content of cottonseed meal.

The causative factor of azoturia or hemoglobinemia in horses is understood to be a superabundance of nitrogenous food during a short period of idleness. These oxen, accustomed to heavy work and a bountiful supply of a ration high in protein and being allowed a short period of rest in a small inclosure,

were subjected to the same conditions under which azoturia occurs in the horse. The substitution of other concentrates for a considerable portion of cottonseed meal in the ration was recommended. Eliminative and tonic treatment was prescribed.

AN UNUSUAL CASE OF PARTURIENT PARESIS IN A COW.

By Drs. DEAVENPORT and HEINY, Hattiesburg, Miss.

On the morning of March 22 was called over long-distance 'phone by client who stated he had a very valuable cow in bad shape. A local "correspondence school graduate" had been treating her for two days and a night, and patient had shown no improvement, but instead had grown worse and was down and unable to rise. My partner, Dr. Davenport, arrived at the patient at 12.30 p. m. (40 miles distant) and found her displaying the following symptoms: Lying flat on side, with head down-hill position the local "quack" had placed her in to facilitate giving enemas; as he stated, she had impaction of the bowels. Cow was in a semi-comatose condition; no sensation on pricking with needle or touching eyeball with finger. Pulse very low; respiration labored; mucous membranes congested; anus and vulva very much swollen from effects of "quack" passing his arm into rectum and giving enemas. Raised cow up on her sternum in a natural position, when her neck immediately described a typical S-shaped curve of parturient paresis. My partner at once suspected parturient paresis and proceeded to give treatment for same, although the owner stated the patient had not calved since last October. Knowing this to be an unusually long time after calving for an attack of parturient paresis to come on, yet he thought it would be good precautionary treatment, as the symptoms were so typical of this disease. The owner stated that the cow had been fed very highly and was giving from 30 to 34 pounds of milk daily. She was in good plethoric condition. He inflated udder with sterilized oxygen and gave hypodermic injection of $\frac{1}{4}$ gr. of strychnine every two hours. At 4.30 p. m. the cow showed some improvement; contents of udder were removed and it was again inflated tightly. The cow was able to drink water, and as consciousness had fully returned, she was given a drench composed of spirits of nitrous ether, two ounces; aromatic spirits of ammonia, two ounces, and

fluid extract nux vomica, one dram. Also gave rectal enema, and at 5.30 p. m. cow was on her feet begging for feed, which he gave her, and of which she ate heartily. She refused to leave stall where she had been down and looked around and lowed, as if looking for her calf. The calf had never nursed the mother except for a few days after birth. This was her third calf. Do not know if she had been rebred or not. The "quack" had used hot cloths over loins, gave enemas, and the day before had given two drams of aloes and two ounces spirits of nitrous ether. He also gave one pint of castor oil the first day. Brother to owner, who is a physician, gave her two grains of morphine night before.

The patient made a complete, rapid and uneventful recovery. Is there any doubt about this being a case of parturient paresis and has anyone else had a like case? If so, we would be glad to hear of it through the REVIEW. The "quack" admitted he would never have suspected parturient paresis or milk fever.

AN UNUSUAL PRESCRIPTION.

By GERALD E. GRIFFIN, Veterinarian, Third Field Artillery, Fort Leavenworth, Kansas.

In a small town in eastern Kansas, the owner of a young heifer, which he raised as a pet, presented her to the male at the proper time; during copulation the heifer was thrown down by the impetuosity of the bull and from that time refused to eat unless food was offered by hand. An empiric was called in and he made a diagnosis of spinal meningitis, which he proceeded to treat with blisters along the spinal column. In the course of a few days the owner consulted a young veterinarian, who was unable to make a diagnosis; he in his turn called in a veterinary friend of much experience, who made a close examination but could find nothing wrong.

The young practitioner pressed the veterinary friend so closely for some line of treatment that the latter suggested in a jocose manner to give the heifer a good drubbing, which he thought would bring her back to her feed. The young practitioner in all seriousness gravely informed the owner that the curative prescription should be the drubbing. When the animal refused to eat that same evening the owner secured a club and soundly belabored the patient. The effect was miraculous; the

animal appeared astonished at first, then commenced to bawl, and at the end of the beating attacked its feed with a good appetite and has been doing splendidly since. I vouch for the truth of the above.

LIMBER NECK (?).

By N. S. MAYO, Virginia Polytechnic Institute, Blacksburg, Va.

An opportunity was recently afforded to hold an autopsy upon a cock one year old, said by the owner to be suffering from "limber neck." The owner had lost several fowls with apparently the same disease, although the symptoms varied considerably. They were all attacked by "sniffles" and had white spots in their throat—roup (?)—and after the acute symptoms subsided they had difficulty in walking or standing. One stepped high and its head kept bobbing about. All had died except the cock, and he was in a bad way. He could not stand. When attempting to stand or walk the head would curl down and forward until the bird would frequently keel over forward. The bird appeared completely conscious and was not paralyzed. An autopsy revealed nothing abnormal, except the external and middle ear, which was filled with cheesy material, either inspissated pus or exfoliated epithelium, mixed with gland secretion. This collection of material seemed to be the cause of the inability of the cock to maintain its equilibrium.

This does not seem to be the true "limber neck" as I have observed it in tropical America. In true "limber neck," as I have observed it, the bird is totally unconscious. This case is reported in the hope that others with wider experience may also report their observations.

COMMISSIONER PEARSON ACCEPTS PRESIDENCY AT AMES.—Hon. Raymond A. Pearson, whose resignation as Commissioner of Agriculture of New York State, was announced in the MARCH REVIEW, has accepted an appointment as President of the State College of Agriculture and Mechanic Arts, at Ames, Iowa. Prof. Pearson will take up his work at that institution in the fall, on returning from his European trip, which is to be devoted to studying agricultural conditions abroad.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TWO CASES OF FRACTURE OF THE FIRST RIB [*Major W. A. McDougall, A.V.C.*].—1. A five-year-old mare, driven in double harness, stumbled and immediately afterwards was on three legs. She is unable to walk and is brought home in an ambulance. Lamé on the off foreleg, the toe only touching the ground and no weight put on the leg is her appearance. Nothing abnormal is observed about the leg except pain on pressure about the shoulder. When made to move, the mare brings the leg forward, but when any weight was put on it she sank down until the sternum almost touched the ground, with the leg pushed out in front, remaining in that position for a few seconds until she recovers herself on the other legs. After two weeks of treatment she was destroyed. A fracture of the first rib on the off side about two inches from the vertebrae was found at post mortem.

2. Incomplete history of a six-year-old mare which was found lying injured on the near side. On account of her great sufferings she was destroyed the following day. Post mortem revealed chronic osteitis of the lower end of the first rib, with the sternal articulation involved. Also transversal fracture of that rib of recent formation.—(*Veter. Record.*)

POLYPUS IN FRONTAL SINUS [*K. Kylasamier, G.B.V.C.*].—Aged gray horse, good saddler, had a little trickling of blood from the left nostril. This increased in quantity and, notwithstanding two weeks' rest, it rather increased. The horse was treated by an empiric for about four months without relief. Then the writer came in. The horse showed small clots and streaks of blood, dark in color, collecting and falling in drops from the left nostril. The breathing of the animal is a little labored and accompanied by a harsh sound. There was a slight bulging over the frontal sinus on the left side and a dull sound given on percussion. A polypus or some vascular growth was diagnosed

and operation advised. After casting and securing the animal, the region was rendered aseptic and with a crucial incision of the skin the bone was exposed. Trephining was performed easily as the bone was rather softened. When the cut disc of the bone was removed a mass of soft flesh was protruding. It was removed, the sinus irrigated with perchloride of mercury solution (1 in 3,000) and, after closing the opening with carbolized tow, the animal was allowed to get up, when breathing was noticed to be improved. Recovery followed without event.—(*Veter. News.*)

IRREGULAR STRANGLES TREATED WITH STREPTOCOCCUS VACCINE [*A. Kevan Murray, M.R.C.V.S.*].—Gray gelding, five years old, had strangles, with a temperature of 105° . Treated, an abscess under the jaw is opened and the horse seems convalescent. Two days later the right parotid is swollen and painful and the right foreleg is also swollen and very stiff. After four days the parotid is free from swelling, but the hind legs are greatly swollen and painful. The thermometer runs up to $106\frac{1}{2}^{\circ}$. Poultices, fomentations, fever medicines, form the treatment. Then came a swelling on the off lumbar region. While that of the hind legs subsides, one makes its appearance on the near loin. Colicky pains become manifest. It is a general infection and the author decides to resort to streptococcus vaccine. He injected under the skin two tablets (Parke, Davis & Co.'s), dissolved in 5 c.c. of sterilized water. Two days after, all the swellings were gone; the horse fed well, his temperature had come down to 103° and soon to $101\frac{1}{2}^{\circ}$. Some four days after, however, a little relapse seemed to occur; the temperature ran up to $104\frac{1}{2}^{\circ}$. Another injection of the vaccine cut it short and radical recovery soon followed.—(*Vet. Rec.*)

IMPERFORATE HYMEN IN CATTLE [*L. L. Steele*].—Although not common, it seems that this trouble is quite frequently observed in some countries. The author describes one as follows: The heifer subject of this showed symptoms of imperforated hymen; she had been straining for several days and was suffering great pain, which had begun soon after copulation. On vaginal examination, the hymen could just be touched with the middle finger, so that it could not be broken down with the hand. A catheter was tried next, but the hymen resisted the pressure, and a trocar was necessary to puncture it. When this was done, violent uterine contractions were observed and about half a gallon

of fetid brownish-white discharge was passed. The contractions soon ceased, and after irrigation with a solution of lysol the animal made an uneventful recovery.—(*Vet. Rec.*)

GASTROPHILUS EQUI AND STOMACH STAGGERS [*Capt. Wakefield Raincy, A.V.C.*].—Record of two cases where the exciting cause of death were most suspicious as being due to the presence of “bots.” Both animals seemed to present the manifestations observed in what is generally called stomach staggers. The symptoms were alike except that in one they were more acute than on the other—it was the violent form and the other the sleepy. The prognosis in both had been serious and the result, notwithstanding proper treatment, the same also, both ended in death. The post-mortem examination revealed in both carcasses nearly the same condition. In the brain only a watery, sodden appearance, and in abdomen, stomach filled with food weighing nearly forty pounds, and when the contents were removed “the pylorus was found thickly studded with ‘bots.’ They extended a little way into the stomach anteriorly and about six inches into the duodenum posteriorly. Only a few were free in the pylorus.” For the author, the bots were the main factors of the gastric impaction found.—(*Vet. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

OLD STRANGULATED DIAPHRAGMATIC HERNIA [*Col. Pagnon, Army Veterinarian*].—“Rigolette” was five years old. Returning from walking exercise she is uneasy, looks at her flank, scrapes the ground, and attempts to lay down. When she does it, it is carefully, and accompanied with moanings. Standing, she has muscular twitchings. No tympanitis, pulse regular, respiration a little accelerated. Opiate drench, dry frictions quiet her. There has been no fecal evacuation. She has three subsequent similar attacks. Rectal examination is negative. The next day the attacks of colic are more frequent; the animal sits on her haunches or lays on her back. Decubitus is always carefully taken, and with moans; respiration is accelerated. Auscultation is rather negative, except slight diminution of respiratory murmur on the right side. Oil and flaxseed tea with pilocarpine gives little relief. Death takes place after

forty-three hours of sufferings. At the autopsy there was found a circular opening through the diaphragm through which a loop of intestine, measuring one meter long, has passed in the thoracic cavity. The opening has regular, fibrous edges, and if not congenital, was at least of old formation. The prolapsed intestine was black and gangrenous.—(*Revue Vet. Milit.*)

GENERALIZED ALOPECIA [*Mr. Jean, Army Veterinarian*].—A horse, "Frontin," has both knees open through falling. Anti-tetanic serum is injected, wounds disinfected, and a friction of mercurial ointment is applied on the anterior face of both joints. Seventeen days after the hairs began to fall off in places, at the head first and gradually from every part of the body. The skin is left entirely unpigmented, light, rosy and without exudation. Microscopic examination of the hairs reveals no parasite. And in three days the animal is hairless, except a few on the legs. There has been no change in the general condition of the animal. Alkaline and arsenical treatment is prescribed internally, with soapy sulphurous washings of the skin and alcohol or chloral frictions. After a few days the animal shows manifestations of severe enteritis, followed by profuse foetid intestinal discharge. The skin gradually recovered its normal aspect and after about one month a new coat of hair began to grow. Two months later the animal was entirely well. Parasites being excluded as cause of the trouble, the writer points out the four following isolated or combined causes to explain this curious case: Intoxication by the antitetanic serum, mercurial intoxication, emotivity, or intestinal intoxication.—(*Ibid.*)

COMMUNUTED FRACTURE OF LOWER MAXILLARY—FALSE ARTICULATION FOLLOWS [*Mr. Lasserre*].—Ten-year-old, half-bred Anglo-Arab, has since several months shown great difficulty of mastication. As a consequence, feeding only on bran and soft food, she has lost considerable flesh and is reduced to an extensive lean condition. On examining the head, it is noticed that the lower incisive arch is slightly twisted to the left, the right orbital cavity, depressed, is filled with a thicker cushion of fat, and there is exophthalmia of the right eye. On the right branch of the lower maxillary there is an elongated, narrow, hard and painless swelling, running upwards towards the temporo-maxillary joint. The lateral motions of the jaw seem limited. There is also discharge from the right nostril. No

subglossal adenitis. Buccal examination with the electric light is negative. Mallein test gives no result. Deep ulcerated tumor in way of formation is suspected. On account of the condition of the animal she is destroyed. At the autopsy there was found a fracture of the right branch of the lower maxillary, running from about two or three centimetres from the origin of the posterior border upwards to a few centimetres back of the last molar. The two segments of bone are, besides the muscles, held in contact by a thick, fibrous membrane, which forms a true articular envelope, allowing, however, very slight lateral motions between them. It shows a small opening which allows communication with the mouth. The bony surfaces are covered with grayish pus with bad odor, and some thin, necrosed splinters of bone. Hypertrophying osteitis lesions exist on both faces of the lower maxillary. Opposite the opening of the false articular membrane, the superior maxillary shows also a fracture of the pterygo-palatine crest.

The history of the case was that the mare had run away while harnessed to an English cart several months previous, fallen, and suffered of only superficial apparent contusions about the body, limbs, vulva and perineum, and that she was able to resume her work after a week. It was only after a long time that her difficulty in eating had been observed.—(*Revue Veter.*)

FRACTURE OF THE LEFT FOREARM IN A HORSE [*Mr. Rousseau, Army Veterinarian*].—An eight-year-old horse receives a kick on the internal face of the left forearm. There is a small contused wound on the antero-internal face of the region, two centimetres above the radio-carpal joint. The horse is on three legs and the hot and painful region is covered with mercurial blister ointment. It is not possible to obtain slings and the horse is placed in a double stall and tied up high to the hay-rack. The next day the condition is much improved, and after three days simple douches with wadding dressing are applied. During the night of the fourth day the animal backs suddenly from his stall, falls down and gets up only after violent efforts some fifteen minutes later. He has a fracture of both bones of the forearm. He is destroyed. At the post mortem a complete oblique fracture *en bec de flûte* is found, the bones being surrounded by a large clot of blood. There were some splinters of bone loose. Close examination of the lower end of the radius shows an incomplete fracture manifested by two fissures running

from the lower extremity of the bone upwards. The case is one more amongst similar accidents when the possibility of the injury has not been considered and precautions taken against it.—(*Soc. des Sc. Veter. de Lyon.*)

CLINICAL DIFFERENTIAL DIAGNOSIS OF THE DISEASES WITH BLOODY URINE [*Prof. G. Moussu*].—In one of his clinical lectures the author said that practitioners have difficulty in making a differential diagnosis between hæmorrhagic cystitis or essential hematuria of bovines, complicated infectious pyelo-nephritis and bovine piroplasmosis, or febrile hemoglobinuria. The following microscopic characters of the urine will aid the practitioner. In the *hæmorrhagic cystitis*, when the urine is collected and left for a few hours in a test tube, it is first with a uniform rosy, red or brown color, but after a while a more or less abundant deposit is noticed at the bottom of the tube, while in the upper part the contents are clear, limpid or only slightly amber color, as normal urine. It is indeed normal urine isotonic; there has been no hemolysis, no destruction of the red corpuscles nor dissolution of the hemoglobin.

In the *pyelo-nephritis*, if again urine is received in a test tube and kept for a while, at first the urine seemed cloudy, hematic, often brownish and foetid, or with a marked ammoniacal odor; after some time pus and red blood corpuscles which the urine contains, with even sometimes epithelial or mucous casts, drop to the bottom of the tube and form a thick, dirty and colored deposit. The urine above it is cloudy, reddish, and, if exposed to the air, becomes rapidly brown. This urine is not isotonic; there is hemolysis, and part of the hemoglobin of the red corpuscles is dissolved.

In *piroplasmose* the urine, collected and kept as before in a test tube, leaves no deposit, remains uniformly tinted. It slowly alters when exposed to the air and gets brown only with time.

These characters of the urine in those three diseases will help to establish a differential diagnosis.—(*Rec. de Med. Veter.*)

ON THE IMPROPERLY NAMED CHOREA OF DOGS [*Dr. L. Marchand and Prof. G. Petit*].—The object of the articles published by the authors, with illustrations of the nervous lesions which they have found in the cases recorded, was to furnish the anatomo-pathological demonstration of the analogy existing between chorea and the infantile paralysis or poliomyelitis. They have classified the several cases subjects of their observations as

serious cases, those of medium severity, those with mild characters. And after considering the disease chorea of dog with that of man, and, again, the canine disease with infantile paralysis, they *résumé* the conclusions as follows:

1. Canine chorea cannot be compared to that of man.
2. Human chorea has its anatomical stratum in the cerebral cortex and the cerebral ganglions. Chorea of dogs is a *meningo-encephalo-medullary* affection.
3. The lesions of canine chorea are of inflammatory nature and the *blood-vessels* are primitively affected. The motor nervous cells are altered secondarily.
4. The lesions of chorea of dog present the greatest analogies with those of the infantile paralysis or disease of Heine-medin, and the epidemic form, acute anterior poliomyelitis.
5. The differences of the symptoms in the two forms, human and animal, viz.: rhythmical tremblings, less marked paralysis in the chorea of dog, are probably due to the fact that the spinal cord of dog possesses a greater functional independency than that of man.
6. The word *chorea* is at any rate improper, and the name of rhythmical paralysis would be more appropriate according to the symptomatic exhibition.—(*Rec. de Med.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SURGICAL TREATMENT OF SINUSITIS ACCOMPANIED WITH ROARING [*Prof. Lienaux*].—This complication of roaring deserves attention, as it is not always certain that once the sinuses distended towards the median line may, after being in that condition for months, resume their proper dimensions. A new surgical operation that the author has performed in several cases may give very satisfactory results.

In this article the professor passes a minute review of the anatomy of the sinuses and of the turbinated bones, and by illustration shows the changes that may occur in the antrum and the nasal cavities, when the sinuses or the turbinated or both are filled with pus, and, after advising careful attention to the condition of the parts, he arrives at the description of the operation which he recommends, consisting not only on the same trephining of the sinus, but also by resorting to the removal of a long portion of the frontal and nasal bones, the uncovering of the dis-

eased turbinated, its puncturing with probed bistoury or directory, freely opening their cavities and, if necessary, the removal by excision or tearing of the entire turbinated.

“Operation not always easily made in one step, but requiring sometimes several attempts. Sometimes scissors had to be put aside and pieces of the turbinated are directly pulled away with forceps. This removal of the wall of the turbinated is always accompanied with profuse hemorrhage, which, however, soon stops of itself. After care consists in the ordinary classical indications of sinusitis, free irrigation and creolinated dressings.”

Roaring generally subsides immediately after the operation. The wound has to be watched, as pieces of necrosed turbinated or granulating membrane may require attention, removal or cauterization.—(*Annal. de Bruxelles.*)

FOREIGN BODIES IN PIGEONS [*Prof. Hebrant and Assistant Antoine*].—Every practitioner knows of the importance that foreign bodies occupy in the pathology of some domestic animals. Horses, cattle, dogs, etc., have commonly presented interesting cases of disease due to the presence of foreign bodies. They can also be observed among birds. Every foreign body that is taken in by those animals, after remaining some time in the crop and the succentric ventricle, without giving rise to any trouble, arrive in the gizzard, where they are stopped by its contents—gravel, stones, etc. If these foreign bodies are smooth and without sharp parts, they remain mixed with the other contents. But if they have sharp points, which may injure the cavity of the organ, they may finally perforate the muscle and come out surrounded by fibrinous inflammatory exudate, forming a mass which remains in the abdominal cavity, more or less adherent to the intestines. Their presence can be easily detected by palpation of the abdomen, with the hand, which detects a round body, often irregular, slightly elastic, and which one might readily take in a female bird, as the fruit of an inter-abdominal fecundation. Sometimes the fibrinous mass becomes attached to some subcutaneous point of the abdominal walls.

The exit of these foreign bodies out of the gizzard is very slow, and while it takes place the bird eats poorly and gradually loses flesh. When the diagnosis can be established surgical interference is always indicated. Open the abdomen and remove the cause of the trouble, when thus the wound is stitched. Convalescence is sometimes long, although sometimes recovery is somewhat rapid.—(*Ibid.*)

ARMY VETERINARY DEPARTMENT.

BOLD AND LUCID SPEECHES OF DRS. TURNER AND HOSKINS BEFORE THE MILITARY COMMITTEE OF THE HOUSE OF REPRESENTATIVES ON THE ARMY VETERINARY BILL.

The bill to consolidate the veterinary service, United States army, and increase its efficiency (known as H. R. 16843 in the House and as S. 5792 in the Senate) has attracted such great attention by the wide publicity that has been given it in the veterinary press and because of the meritorious nature of its purposes that a word may be printed here upon the reception the bill has had from the Military Committee of the House of Representatives, together with some reference to the speeches made in defense of the bill before that committee. In the April REVIEW was mentioned the fact of the patient hearing accorded the defenders of the bill by the members of the Committee on Military Affairs. The representatives of the profession spoke out boldly in its defense and were satisfied with the full opportunity permitted them to enlighten the minds of the committeemen on certain features of the bill.

We strongly advise every veterinarian who has the slightest interest in the passage of the bill (and all have really very great interest in it) to apply to his Congressman for a printed copy of "Hearings Before the Committee on Military Affairs, House of Representatives, on H. R. 16843." The statements of Veterinary Colonel Piche, of the Canadian army; of Captain Hull and of Dr. J. R. Mohler are fine reading. But we venture the thought that the statements of Drs. Turner and Hoskins will, because they are mostly in speech form and are not broken up much into question and answer, bear reproduction in the REVIEW. All of these gentlemen are to be thanked for their lucid remarks as they are printed in the hearing, and their act merits the lasting remembrance of their confrères in the profession.

STATEMENT OF DR. JOHN P. TURNER, WASHINGTON, D. C.

Dr. TURNER—Mr. Chairman, I entered the army shortly after graduation at the solicitation of Dr. Huidekooper, who will

be remembered by some of the older members of the committee as the man who attempted to organize the veterinary corps of the army. I entered the army about the time that Dr. Piché and several other young men joined, thinking at that time that there was some future for the veterinarians in the army. Very shortly after entering the service, however, I ascertained that there were certain objections at that time to commissioning army veterinarians, and when the War Department finally decided to refuse to commission the veterinarians I saw no future in the service and resigned. There was a well-grounded prejudice in the army against the commissioning of veterinarians at the time I was in the service, and I, as a commissioned officer, would not have liked to see commissioned certain veterinarians who were in the army at that time. Far be it from me to cast any reflections on those men as veterinarians or as honorable men, but they were men who had entered the army—one of them in the dragoons before the Civil War, and just retired as the oldest man in the service of the United States army. Another had entered the army during the Civil War as an enlisted man, and another one entered very shortly after the close of the war, and all of them at a time when graduate veterinarians would not think of entering the service, and at a time when we had no schools in this country. These men did not have the chance to attend colleges; they were what we call self-made men, and I have heard a distinguished United States Senator say that one of these men was the best judge of a cavalry horse in our army and a very valuable man to the service. But from other standpoints he was rather undesirable as a commissioned officer.

I believe that the sentiment that exists in the War Department and among officers of high rank against commissioning veterinarians is largely due to their remembrance of some of these old men—not from their ability as veterinarians, but possibly from their social status. I can say, however, that these men were retired last year by the action of this committee. It should have been done 10 years ago. It was not a mistake, but an oversight possibly. At any event, this committee last year, by putting a rider on the appropriation bill, retired all these old men. So there is no longer any excuse among the commissioned officers of the army and War Department along this line for not commissioning the veterinarians from the men now in the service. Take the men in the service. Forty-two men have stood a severe examination, which is an examination equal to that of an

officer entering the army—an examination which lasted about 10 days—in which the young veterinarian is examined thoroughly on all subjects pertaining to his general education, as well as on all subjects pertaining to his technical duties. I have been informed by officers that they prescribed these long, tedious examinations anticipating the time when the veterinarians would be organized into a corps of officers. The idea is not a young one. The idea occurred in Mr. Lincoln's time. In 1861 Mr. Lincoln sent for a veterinarian who was residing in Washington to secure his services for the army. This veterinarian was an English graduate and a very fine man in every respect. Mr. Lincoln said to him that he would like to have him enter the army as a veterinarian. The old gentleman proudly drew himself up and declined, saying, "Why, sir, in my army and in my country the veterinarian is a commissioned officer, and when you see fit to commission me I will serve, but not otherwise." And in order to secure that man's services he was commissioned a captain quartermaster and stationed at a point across the river, where the horse depot was located. So we are following a precedent in our army when we ask you to commission the veterinarians. We have also a captain of infantry and a major who rose through our work, but when they enlisted they were in the ranks. It seems to me that if our army, through its general staff, has to go to Europe and pattern after European models, they should follow them in this respect. While I am not a military man, I know of nothing original in our army.

I do not know of anything that has not been borrowed from the War Lord; everything we have in our army from the general staff down, it seems to me, has been borrowed from the War Lord, and I believe we have not a single original military officer in this country. We have commissioned dentists, and that is a very necessary position to my mind. Any man stationed out on the Black Hills, several hundred miles from Omaha, plagued with the toothache, can certainly appreciate the advantage of having the dental officer at hand. It was said that the dentists ought not to be commissioned because they did not command men, and the same argument is being urged against commissioning the veterinarians, who must command men. He must command his stable sergeants, farriers and blacksmiths, and the privates who are detailed to his hospital. It has been advantageous in all the armies of all the civilized nations to commission the veterinarians in order to get better service and to get the full benefit of their work. The United States gives these men the pay of officers,

but they use three-fourths of these men where their work is utterly ineffective, because they are denied the rank that is absolutely essential to effective service. For instance, the veterinarian may say that a certain operation should be performed and that it is necessary. Notwithstanding the skill and learning the veterinarian may have, and notwithstanding the fact that he may have devoted years of study to his profession, a second lieutenant can say to him, "You cannot perform that operation," and that would settle it. While this may not be frequently done, yet it is a military fact. It is a military fact that the usefulness of the veterinarian in our army depends largely on the opinion that the officers, and especially his colonel, have of him. It is a very disagreeable experience to have a new colonel every three years, and to be placed on a period of probation with that colonel to determine whether or not you are a well-qualified veterinarian. Every three years a new colonel comes, and you must prove to him that you are a qualified man, and every time a change of officers occurs the experience is repeated. The service has been improved in the armies where veterinarians are commissioned largely by the fact that the veterinarian has conferred upon him an official status, which, in turn, gives him a different social status.

In other words, it gives him entrée to official society, and officially they meet their officers on a plane of social equality, and that gives the veterinarian an opportunity to cultivate a more wholesome relationship with his officers, and an opportunity to carry out their wishes to better advantage. So that officially there is no reason why the veterinarian should not be commissioned, and, from the standpoint of economy, if you give the veterinarian the pay of an officer, why not give him a rank commensurate with the pay he receives? If you pay him this amount of money in order to get better service, why not get your full money's worth and put these men in charge of the work they should do—work that is now being done in a way by amateurs?

Now, there is a well-grounded prejudice in the army against the non-combatant corps, and there is a belief that if the medical corps and all the other corps of non-combatants were put in the same condition to-day that we are in there would be opposition in the War Department to commissioning them. A combatant officer does not like to see the same rank conferred upon a non-combatant. That feeling certainly exists among combatant

officers, but if we have gone to the extent of commissioning doctors, and have gone to the extent of saying that ministers of the gospel shall be captains; that dentists, who have no command whatever, shall be first lieutenants; that the cashiers of the army shall be major paymasters; if it is necessary and proper that the lawyers of the army shall be colonels, it is just as essential that the veterinarians should be commissioned. Consider for a moment the important duties of the veterinarian; the duty of inspecting animals before they are purchased and the inspection of horses prior to their condemnation; the duty of inspecting certain commissary supplies, as well as the inspection of camps under certain rules of camp sanitation. All this work is in the hands of amateurs—and when I say amateurs, I refer to the active officers and quartermaster officers who attempt to perform this duty, which should be intrusted only to the hands of those who have been specially trained for it.

I know there is a prejudice in this committee and in the War Department against an independent corps of veterinarians, and for that reason I am in favor of Mr. Hull's amendment providing that they be placed under the quartermaster-general's division for purposes of administration.

Gentlemen, I know if there had been a commissioned veterinary corps in the camps during the Spanish-American War, that if the veterinary sergeant had had the rank of major or captain-quartermaster, or if he had been a commissioned officer of any kind, the amount of money which would have been saved during that war, by preserving the thousands of horses which had the strangles and influenza, later developing into glanders, would have been sufficient to have paid the veterinary corps for a hundred years to come. It is preposterous to think that during the Spanish-American War and shortly after the close of that war State boards of health had to go into the United States courts to prevent the army from selling horses which had been exposed to glanders.

MR. ANTHONY—Were these horses sick at the time they were purchased, or did the diseases develop in the camps?

DR. TURNER—The diseases developed in the camps largely.

MR. ANTHONY—Were there any veterinarians attached to the regiments at that time?

DR. TURNER—There were, but if you had been a veterinarian for several years and had on several occasions found it necessary to go to your colonel and make certain recommendations,

and you had found that your recommendations as a professional man were either swept aside or ignored because you were simply a subordinate, with a position something like that of wagonmaster, you would not have felt like trying that proposition over very frequently.

The CHAIRMAN—In time of war are the veterinarians exposed in any way? Do they go in the field?

Dr. TURNER—Yes, sir; the veterinarians are not covered by the Red Cross.

The CHAIRMAN—If the veterinarians were in this corps that you speak of in this bill, would they in time of war be exposed to danger? Do they go into the field with the troops?

Mr. SLAYDEN—Do they incur any personal hazard?

Dr. TURNER—Yes, sir; the first man who died in the Eighth Cavalry in Cuba from yellow fever was a veterinarian. He does not go into battle any more than the doctor does.

The CHAIRMAN—I am asking whether or not the veterinarian in time of war would incur any personal hazard?

Dr. TURNER—Yes, sir; he would be with his regiment. I suppose that if his regiment was ordered to make a charge, they would not put the doctor in the line of the charge. He would probably be back with the transport.

Mr. SLAYDEN—But he would not be required to perform duty on the firing line?

Dr. TURNER—Yes, sir; the same as the surgeon. We have our ambulance to drag wounded horses to the rear, where we pass on the question of whether or not the horse should be shot or whether he should be sent to the veterinary hospital station for treatment.

Now, we have nothing of this kind now. We have simply two men attached to the regiment that doctor the horses. They simply doctor the horses. Their instruments, their supplies, their books, and everything are purchased by some officer in Washington, who has no technical knowledge along the line of their work. There is absolutely no semblance of an organization, and, what is more essential, there is no chief who can overlook the entire situation, and say, for instance, "What is the cause of the great loss in this regiment this year; why has the Eighth Cavalry suffered from loss of horses; why are there so many diseases and condemned horses in this troop, and why is it that the First Cavalry has such a low death rate?" There is nothing of the sort provided; the veterinarian is simply consulted by the officers, and

if they wish to carry out his instructions they do so and if they do not they do not. An inspector-general, one of the best in the service, told me a great many years ago that if he stayed in that department another year he intended to have another veterinarian to go around with him to inspect the horses.

Now, Captain Hull will remember that in this committee room, when this matter was being considered, an army general said, "Why, gentlemen, if we commission these men, a major veterinarian might be in a position sometimes to say to a captain of cavalry, 'you cannot take this troop out because the horses have sore backs.' " Now, it has been stated as a fact that the colonel or major doctor once told a colonel of the regiment that it was not right to drill the men when the weather was 15, 20 or 30 degrees below zero. Now, I believe they have the right to decide climatic conditions——

Mr. ANTHONY (interposing)—Do the veterinarians purchase or have anything to do with the purchase of their cavalry supplies?

Dr. TURNER—No, sir; the veterinarian has nothing to do with it; it is done through the quartermaster-general's department.

Mr. ANTHONY—Do you think it would improve the situation and promote the efficiency of the service if the veterinary corps should have the power to purchase its own supplies?

Dr. TURNER—Yes, sir; that is contemplated in the bill. At present the veterinarian has nothing to do with his supplies.

The CHAIRMAN—I do not think that the veterinary corps is given any authority of that kind in the bill.

Dr. TURNER—You will find that provision in line 8 on page 1 of the bill, "One as purchasing officer of veterinary supplies." At the present time each troop of cavalry draws its allotted amount for replacing its supplies every three months.

Mr. ANTHONY—Whether they need it or not?

Dr. TURNER—Yes, sir; and my experience and observation were that the captain always drew it every three months. At present there is an allotment of 25 cents a quarter for each horse for medicine. I think another gentleman will bring out that proposition, but I understand that if a veterinarian were put in charge of this thing 5 cents a quarter would be sufficient.

The CHAIRMAN—Why do you want five of these veterinarians as inspectors of meats in the subsistence department?

Dr. TURNER—Mr. Chairman, that was simply to bring the

allied forces into one organization. At the present time the quartermaster-general has two or three, and possibly five, veterinarians, who are attached to the subsistence department. These are well-paid men, who devote their entire time to supervising the meat after it has been inspected by the agricultural department.

The CHAIRMAN—Are they not detailed from the agricultural department?

Dr. TURNER—No, sir; they are attached to the subsistence corps.

Mr. SLAYDEN—Then they have a double inspection of meats, first by the inspectors of the Department of agriculture and then by the veterinarians of the subsistence department?

Dr. TURNER—Yes, sir.

Mr. ANTHONY—But these inspections are not had for the detection of the same imperfections, are they?

Dr. TURNER—No, sir.

The CHAIRMAN—Why should a veterinarian be an inspector of meat? Does his education qualify him for that service?

Dr. TURNER—Yes, sir.

The CHAIRMAN—Are the inspectors of the agricultural department veterinarians?

Dr. TURNER—Yes, sir; every one of them, and they specify that they shall come from certain regular colleges.

Mr. SLAYDEN—If this plan was adopted, then we might disband that force of animal inspectors in the Department of Agriculture.

Dr. TURNER—No, sir; I should not think so.

Mr. SLAYDEN—The veterinarian who is supposed to keep the animals alive is also supposed to examine them after they are dead to see if they are fit for food.

Mr. ANTHONY—All meat purchased for the army must first have been inspected by the inspectors of the Bureau of Animal Industry of the Department of Agriculture at the packing houses. Are not these meats afterwards inspected by the veterinarians of the army?

Dr. TURNER—At the present time the veterinarian at the post has nothing to do with the inspection of meat.

Mr. ANTHONY—What would be the more important duties of these veterinarians in the garrisons?

Dr. TURNER—They could see that the meat supply at the post was in proper condition; that the milk supply at that post was wholesome and furnished from healthy animals—in fact, the

veterinarians could be used in a dozen different ways around the post if they were given the proper rank and authority, but as it is now, having no rank, the veterinarian is simply considered out of it.

Mr. PEPPER—Does the medical department of the army have anything to do with the inspection of milk?

Dr. TURNER—No, sir.

Mr. PEPPER—Are they not competent to do it?

Dr. TURNER—No, sir; they would not know what kind of a cow the milk came from, and they would not know on which side of a cow to go to examine her udder. I doubt if any cavalry officer would know unless he was raised on a farm.

STATEMENT OF DR. W. HORACE HOSKINS, PHILADELPHIA, PA.

Dr. HOSKINS—I am sorry that Dr. Melvin cannot be here this morning to address the committee on the subject of this bill. He is engaged with a board of army officers before the Commissioner of Indian Affairs in the consideration of a plan to utilize some of the reservations in the breeding of horses for the army.

I can add very little to what has already been said by the gentlemen who have preceded me, and I am of the opinion from what has been said here this morning that you gentlemen must now recognize that the profession of the veterinarian has become one of the most important in the country. You must realize that they have contributed a great deal to the upbuilding of the country, when you take into consideration the fact that there are produced in this country annually more than \$300,000,000 worth of animal food products that are sold in foreign countries under our food-inspection law, and that these products must pass under the observation and inspection of skilled veterinarians. You must realize that we have a number of schools all over the country, all conducted on a high plane of efficiency, and, in addition, we have instituted and have to-day a central school, the curriculum of which is as high as that of any similar institution in the world. The breadth and scope of the work required in our institutions to-day exceeds that required in preparation for almost any other learned profession. There is scarcely any other profession in which a wider scope of knowledge and better training is required in order to fulfill the duties required than in that of a veterinarian.

Now, no body of men can be engaged in an important service of this kind for the army without some unofficial aid or

help. The veterinarian must have such aid or help under his control and direction or he cannot give the efficient service that we ought to have in our army. As illustrating the value of this service, let me say, you have heard nothing of the embalmed-beef matter since you have had skilled veterinary surgeons to look after the inspection of the meat used in the army; you have heard nothing of disease in the army as the result of furnishing unwholesome animal food products. Now, in the past men have gone into the army without the proper educational qualifications for this work. Others with every other qualification have gone into the army hopeful that there would be some reward for their faithful, efficient service; but up to this time these hopes have not been realized. They have been hoping that there would be some sort of recognition accorded them, such as has been accorded the profession in every other civilized nation of the world. Some have waited for 30 years in the hope that their services would be properly recognized, but we are standing in the same position to-day. These men are rendering this valuable service to the country, giving the country the benefit of their trained minds and devoting their lives to the good of the people, without any reward. I do not believe that you gentlemen, who have come here and given some portion of your lives to the public service, would want to see a profession that has been lifted up to the high plane that ours has been, without government or State aid, until about five years ago we established for it a higher standard than that of any other branch of medical science and, with some few exceptions, than that of any other learned profession—as I say, I do not believe that you gentlemen would want to deny a profession like ours the recognition to which we are justly entitled. We have hoped for years that the time would come when the government would recognize these men who are willing to devote their lives and their abilities to the service of the country, and I believe that you will no longer deny it.

Many of the most distinguished officers of the army have at some time given their approval to this proposition. General John R. Brooke urged that the veterinarians be placed upon the basis and accorded the recognition proposed in this bill. It was also advocated by Major-General James H. Wilson, by Major-General J. C. Breckenridge, and by a number of others officers of the army of high rank. All these men have seen the necessity of giving the veterinarian this recognition in the army in order that he may be enabled to render greater and more efficient service.

Now, you have granted such recognition to other branches of the service that are no more entitled. It is the policy of our country to commission physicians, dentists and chaplains, and I cannot believe that you will longer discriminate against a profession that has lifted itself against so many obstacles as ours.

D. A. H.

VETERINARIANS of New York City learn with regret and surprise of the death of one of New York's most prominent veterinary practitioners (retired), Dr. W. D. Critcherson (see obituary notice on page 243). Had the news of his death reached them earlier, and the information that he was to be buried in Woodlawn, great numbers of them would have attended the services and paid their last respects to their departed brother.

WORTHY OF EMULATION.—“Tuberculosis has been eliminated from every herd of pure bred cattle in the state, something that cannot be said of any other state in the Union,” was the statement made by Dr. S. H. Ward, secretary of the Minnesota State Sanitary Board, which was in annual session at the old Capitol.

Dr. Ward reported that the state is remarkably free from animal diseases. Only fifteen horses have been killed because of glanders in the quarter January 1 to March 31 last. No case of hog cholera has been reported to the Board for some time.—(*New York Herald*.)

AN ACT to regulate the practice of veterinary medicine, surgery and dentistry in the state of Kentucky, and to establish a state board of examiners, was introduced in the legislature at its last session, and, although defeated, it has not discouraged the plucky and optimistic veterinarians of the blue grass country, as they feel that they have accomplished something in getting it further than on any of the three previous occasions when the same bill was introduced and each time killed in the committee. It will be introduced again in the next legislature.

BIBLIOGRAPHY.

CLINICAL DIAGNOSTICS.

CLINICAL DIAGNOSTICS, A Text-Book of Clinical Diagnostics of the Internal Diseases of Domestic Animals, by Bernard Malkmus, Professor of Theory and Practice and Director of the Clinic for Internal Diseases at the Royal Veterinary College of Hanover, Germany. Fourth edition; revised and enlarged. Translated from the latest revised German edition by David S. White, Dean of the College of Veterinary Medicine, Ohio State University, and Paul Fischer, State Veterinarian of Ohio. Octavo, 259 pages, with 55 illustrations and 4 colored plates. Half leather, \$3.00 net. Alexander Eger, publisher, Chicago.

Clinical Diagnostics is an excellent work, just from the press, bearing the publisher's date of 1912. It is of convenient size for easy handling and arranged for ready and convenient reference. The cuts are clear and strikingly illustrative, the chapters are short, the descriptive matter concise and to the point. In the author's preface to the first edition he says, at the very outset: "The only safe foundation for the treatment of animal diseases is a correct diagnosis of the malady." And that sentiment characterizes the work throughout. It is a guide for the diagnostician, the subjects being presented in a clear, at the same time, condensed form, so that a great amount of information may be gained with a small amount of reading. In *Clinical Diagnostics* the reader gets the benefit not only of many of Europe's greatest diagnosticians, but also of two of America's foremost veterinarians and teachers, who have given of their valuable time in order to place this wonderful little work of Prof. Malkmus in the hands of American veterinariary students and practitioners, having been prompted to make the translation through a realization of the need of just such a text-book for the students in the College of Veterinary Medicine of the Ohio State University. The work is thoroughly up-to-date, and describes not only each disease, but in an easy, lucid manner explains the method of conducting an examination and arriving at a diagnosis in each particular malady. The paper is good, the type clean and easy to read, the cuts graphically illustrative of the subjects they represent and, altogether, *Clinical Diagnostics* is a valuable aid to students and practitioners of veterinary medicine, and will tend to make them better diagnosticians.

OBITUARY.

WILLIAM DANA CRITCHERSON, M.D., D.V.S.

Dr. William D. Critcherson died suddenly of cerebral apoplexy at his home in Westerly, R. I., on Monday, April 8, 1912, in the fifty-fourth year of his age. Dr. Critcherson was born at the above place September 11, 1858, and received his early education in the public schools of that town. On reaching manhood he entered the American Veterinary College, in New York City, from which institution he graduated in 1883, receiving the degree of doctor of veterinary surgery. Upon getting his degree he took the competitive examination for house surgeon in the college hospital, and was appointed to the hospital staff by Prof. Liautard, serving in the capacity of house surgeon for one year, when he began the practice of his chosen profession at Norwich, Conn. After a year and a half at that place he accepted a position as assistant to Dr. De Voe at the stables of the Fourth Avenue Street Railway Company, New York. On the retirement of Dr. De Voe, shortly afterward, Dr. Critcherson was placed at the head of the veterinary service, where he remained until the road was changed to the electric system, and many veterinarians who were students of twenty and twenty-five years ago remember his kindly advice and practical instruction, freely given them when they would call at the Fourth avenue stables, which they frequently did, a dozen at a time, after the close of the college clinic on Saturday afternoon. On his return to New York to accept the position with the street railway company Dr. Critcherson took up the study of medicine and received the M. D. degree in 1888 from the medical department of the University of the City of New York. When the Fourth avenue road changed its system Dr. Critcherson accepted a position with the American Express Company of New York, with whom he remained eleven years, when he left New York, in 1906, returning to his birthplace, where he purchased "The Knolls," a beautiful country home on the outskirts of Westerly, R. I., where he remained to the time of his death. Dr. Critcherson was an ideal practitioner of veterinary medicine, careful, observant, methodical, and had a rich clientèle outside of his con-

tract work. He was on the "honor roll" of the American Veterinary Medical Association, having joined that organization in 1883. He was an active member, and had held offices in the Veterinary Medical Association of New York City. He was a prominent Mason, having been master of Excelsior Lodge, F. and A. M.; high priest of Jerusalem Chapter, New York, and Coeur de Lion Commandery, of that city. He was buried with Masonic service at Woodlawn Cemetery, New York City, April 11, 1912.

In 1886 Dr. Critcherson married Miss Emma S. Davis, of New York, who survives him. He is also survived by one daughter and three sons.

HANNAH MARIE HOLLINGWORTH.

Deep and sincere sympathy from veterinarians and their families all over the country is felt for Dr. and Mrs. Walter G. Hollingworth, of Utica, N. Y., who have suffered the saddest kind of affliction in the loss of their sweet, good, amiable and only child, Hannah Marie Hollingworth, who died on March 28 at the tender age of fifteen years. She had been seriously ill since the middle of February, and was placed under the personal care of one of New York's noted specialists; but, despite every effort and the most skillful treatment known to science, she succumbed to the malady and went to rest with her Heavenly Father.

HONORS FOR PROFESSOR KOCH—INSTITUTE IN WHICH HE WORKED SHALL BEAR HIS NAME, SAYS KAISER.—Berlin, April 23.—In connection with the thirtieth anniversary of Professor Koch's announcement of his discovery of the tuberculosis bacillus the German Emperor has ordered the Royal Institute for the Study of Infectious Diseases, in Berlin, in which Professor Koch worked for twenty years, to bear Koch's name hereafter. The Emperor, in his decree, says:

"Professor Koch, by his discovery, opened the combat against the greatest scourge of mankind, which has since been conducted with unprecedented success and has made suffering humanity his eternal debtor."—(*New York Tribune*, April 24.)

SOCIETY MEETINGS.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The thirtieth annual meeting of this association was called to order February 6, 1912, by President C. C. Mix. After roll call the minutes of the last meeting were read and approved. President Mix, in his address, said that it was with no slight degree of pleasure that he extended greeting to the members, old and new, assembled at this thirtieth annual meeting. "We are gathered here in convention as sanitarians," he said, "and are here to exchange views and discuss methods whereby the health of livestock should be preserved, their diseases better combated and scourges eliminated. The eradication of tuberculosis is yet an unsolved problem, its prevention a matter of educating the public. Dr. Seigel, of Germany, has announced the discovery of the bacillus of the foot-and-mouth disease." In conclusion, the president spoke of the satisfaction and honor that has come to our State and association by the election to the presidency of the A. V. M. A. of our fellow member and faithful and untiring worker in our ranks, Dr. S. Brenton.

Thirteen gentlemen made application for membership, twelve of whom were elected.

It was moved and seconded that the by-laws be suspended and that the secretary be instructed to cast the unanimous vote of the association for the election of the applicants. This was done, and the president proclaimed them elected to membership.

The secretary, in reporting, said that during his term of office he had not seen fit to inflict a lengthy report, as the routine business of the association was usually tedious, and it was thought expedient to leave the members to follow the doings of the association, through the records, communications, etc. The treasurer's report was confined to receipts and disbursements only. In conclusion, Secretary Black thanked the members for their hearty support and appreciation during the years he had the office, and it was with feelings of regret that he must announce that under no circumstances would he accept the position again at this time.

It was moved and seconded that the secretary-treasurer's report be referred to the Finance Committee.

Communications were received from Dr. D. Cumming, Prof. E. A. A. Grange, J. H. Blattenburg, J. C. Whitney and others.

It was moved and supported that a telegram be sent to Dr. D. Cumming, who was recovering from a serious illness, and to the Ontario Veterinary Association, whose meeting was in session at Toronto, extending greetings from the M. S. V. M. A.

Dr. T. H. Buckingham, in a letter, reported the loss of his membership certificate by fire, and asked that another be made out and sent to him. Upon motion, the secretary was instructed to make out a new certificate and send it to Dr. Buckingham.

Communications from Pasteur laboratories asking for contributions to Arloing monument were referred to the Committee on Resolutions, composed of Drs. Dunphy, Brenton and Farmer.

Committee on Legislation.—Report of L. M. Hurt, who said that there was not much to report, except that an effort had been made by the last legislative session to reopen our practice law so as to admit non-graduates. It was killed, however. A stallion registration bill had been passed, and the State Veterinary Board had been made the Stallion Registration Board. A bill had been introduced to establish the office of State veterinarian in connection with the State Board of Health, to provide for the control, suppression and eradication of dangerous and infectious diseases among domestic animals, but it failed to pass.

The Committee on Prosecution reported through Dr. J. Hawkins, chairman, who thought, as a whole, the work of the committee had been satisfactory, as in many cases those notified by the committee that they were violating the law quit practicing. Dr. Sexsmith, of the committee, suggested that if some funds were available for that purpose a member of the committee might go to sections where complaints were made and make the prosecutions, thus enabling the local veterinarian to keep out of it. No action was taken on this suggestion.

The Executive Committee, reporting on the matter of the admission to this association of graduates of the Grand Rapids Veterinary College, recommended that those conforming with the requirements of Circular 150-A., B., B. A. I., be eligible to membership in the M. S. V. M. A.

It was moved and seconded that the recommendation of the committee be adopted.

Dr. Hawkins brought out the matter of the summer meeting,

and while the proposition was received with favor, it was thought advisable for our officers to use their energies to have a good attendance of our members go to Indianapolis this coming summer.

It was moved and seconded that the secretary send out a letter prior to the A. V. M. A. meeting urging all Michigan veterinarians to attend, especially to show our appreciation of our fellow member, Dr. S. Brenton, president of the A. V. M. A.

Election of officers resulted as follows: President, Dr. Judson Black; first vice-president, Dr. H. M. Armour; second vice-president, R. H. Irwin; third vice-president, H. H. Clement; secretary-treasurer, W. A. Ewalt, Mt. Clemens. Drs. H. L. Schuh, E. B. Cavell, J. E. Ward, G. D. Gibson, J. J. Joy and A. McKercher were elected a Board of Directors.

On a motion made and supported Dr. S. Brenton was the unanimous choice of the association for member of the State Board to succeed himself, which was carried.

Upon motion, Dr. C. C. Mix was selected and named as the representative of this association to the meeting of the A. V. M. A. at Indianapolis week of August 26, 1912.

Dr. E. B. Cavell was called upon to give his observations of the symptoms of infectious anæmia. This subject was discussed by Prof. Williams, Dr. Wilson, Dr. Giltner and Prof. Lyman. Some discussion of the tuberculosis problem was instituted by Prof. Marshall, Mr. Hinds and Dr. Dunphy.

Meeting called to order by Second Vice-President Cavell, 7.30 p. m. February 6, and the tuberculosis discussion was resumed by Prof. Marshall, who advised using more care in testing and taking more temperatures.

Hog cholera was discussed and the serum treatment was dwelt on at considerable length. It is not a curative agent, but a preventive.

Dr. Dunphy announced that those of the members who desired to see the tuberculin injection into those cattle that were to be tested could now retire to the barns.

The major part of the forenoon of February 7 was devoted to the report of the Committee on Diseases. State Veterinarian Giltner said that glanders proved to be in nearly all reported cases as a false alarm. Mallein test was most generally used, and spoke of two tests, agglutination and precipitation. He advised veterinarians when in doubt to send a bottle of blood from suspected case to the laboratory for test. Infectious abortion is quite widespread; the germ has been isolated in several states, Michigan included.

Hog cholera was also discussed in this report. Dr. Giltner and his committee were congratulated upon their very instructive and interesting report, much of which was explained by Dr. Giltner, with the aid of blackboard and charts.

A very profitable discussion followed each of the subjects treated.

Dr. Pope, B. A. I., gave a very interesting talk on disinfection that was much appreciated and listened to with great interest.

Dr. Snyder, of the M. A. C., was present at a portion of our meeting and gave a very interesting talk upon the progress of veterinary science. He said no profession was making greater progress.

Mr. H. H. Haliday and Mr. H. H. Hinds, of the Livestock Sanitary Commission, were present during the discussion of the Committee on Diseases report and took part.

Dr. H. M. Armour gave a short talk on the subject "Treatment of Wounds," which was discussed by several of the members.

Dr. James Harrison's paper, "Veterinary Practice on the Ranges of Texas," was read by Dr. E. A. Ewalt, in the absence of the author.

Dr. R. F. Erwin said that he had no experience with the subject assigned to him, "Antitoxin in Strangles and Influenza," but the subject was discussed by other members. Dr. E. H. Sheperd, of Cleveland; Drs. Cavell, Mix and Dunphy took part in this discussion.

Meeting reconvened Wednesday, February 7, 2.30 p. m., and after the Executive Committee had reported on some additional applicants, Dr. F. M. Blatchford gave a short talk on the subject "Is the Auto a Good Investment for the Country Practitioner?"

Dr. R. H. Wilson gave an excellent paper on "Biological Products" that was much appreciated, and the discussion that followed showed that our members have retained their interest in these scientific subjects.

Prof. R. P. Lyman read a very instructive and able paper on the subject "Differentiating the So-called Colics in Solipeds," which was listened to by all who had the pleasure of being present.

The meeting now repaired to the Entomological Building, where Prof. W. L. Williams gave an illustrated lecture on "Sterility in Cows." This part of our program was unusual, and to say it was enjoyable is putting it mildly.

It was the consensus of opinion that in the history of our association a more pleasant and profitable session than this afternoon had never been held.

Thursday, 9 a. m.—Post mortem was held on three of the tubercular reactors. The first was found to be generally infected and was a very interesting exhibit to most of those present. The second showed only lesion in mediastinal glands. The third also showed well-marked lesions. The post mortem was conducted by Dr. G. W. Dunphy. Dr. Pope gave a talk in the abattoir upon the subject "Why the First Cow Should Be Rejected for Purposes of Human Food."

At the operating room at the college Prof. Williams operated on two roasters, trephined a facial abscess, and demonstrated ovarian cysts in the sterile cow that was present for clinical purposes. Dr. W. L. Brenton performed low neurectomy on a navicular subject.

Meeting reconvened 1.30 p. m. The Committee on Resolutions submitted the following, which were adopted, on motion:

"Whereas, It has pleased the Divine Ruler of the Universe, in His infinite wisdom, to remove from our midst our esteemed friend and fellow member, Dr. D. G. Sutherland, of Saginaw, it seems a fitting time to record our feelings of grief at the loss of a true and tried friend and co-worker; therefore be it

"Resolved, That this association extend to the bereaved family the assurance of our sincere and heartfelt sympathy in this time of sorrow and bereavement, and that a copy of this resolution be sent to the family of the deceased and also be spread upon our minutes.

"(Signed) G. W. Dunphy, S. Brenton, Thomas Farmer, Committee."

"Whereas, This association has learned of the loss of the beloved wife of our esteemed member, Dr. J. B. Stevens, of Yale; therefore, be it

"Resolved, That this association extend to him our sincere and heartfelt sympathy in this his sad affliction, and that a copy of this resolution be sent to our estimable co-worker and be spread upon our records.

"Signed by the committee."

Retiring President Mix called President-elect Black to the rostrum and handed him the gavel.

President Black said that he had intended making a few suggestions relative to the meeting of the A. V. M. A. in Indianapolis.

olis the coming summer, and some other matters of moment relative to our next meeting, but owing to the absence of the majority of the members, who had started for home, the matter would be taken up by letter to the members.

Banquet.—About sixty were served at the banquet of the association at the College Café. After an excellent repast of food for the body a most pleasing and instructive feast was furnished for the mind.

Principal Snyder, of the M. A. C., responded in a very agreeable manner to the toast "The Veterinary Division of the M. A. C." It was evident from Prof. Snyder's talk that the advocates of the higher veterinary education have an ardent supporter at the head of Michigan's Agricultural College.

Prof. Marshall, who the boys are always glad to hear from, responded to the subject "Bacteriology and Its Relation to Veterinary Science."

Dr. G. W. Dunphy, in his usually happy manner, spoke on "The A. V. M. A."

Dr. R. H. Wilson gave an interesting talk upon "Serum Therapy in Hog Cholera."

Prof. Williams must have been assigned a responsive subject, as he certainly gave us a talk that made those that heard it look at their hands and fingers. It was much appreciated and was one of the pleasing incidents of the professor's visit. His subject was "Clean Surgery."

Prof. Lyman's subject, "Uniform Veterinary Degree," was an interesting topic, well handled.

Other speakers were President Mix, Dr. Joseph Hawkins, Dr. Giltner and others.

JUDSON BLACK, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY—MARCH MEETING.

The regular monthly meeting was called to order by the president, Dr. George H. Berns.

The minutes of the February meeting were read and approved.

The president then introduced Dr. A. Eichhorn, of the pathological division of the Bureau of Animal Industry, Washington, D. C., who gave a very interesting and instructive address on the complement-fixation method for the diagnosis of glanders.

The doctor, in part, stated that before the discovery of the glander bacillus this disease was diagnosed by the clinical symptoms only. Mallein is not accurate enough as a diagnostic agent, for it is found that a reaction will be given in cases not glandered.

With a record of 7,000 mallein cases in which post mortems were held it was found to be 90% accurate, but this is not considered accurate enough for practical diagnosis.

The agglutination method is found to be quite accurate in the acute form of glanders, but unreliable in the chronic. In chronic cases the blood will very often agglutinate below 1/500.

The complement-fixation method has been adopted as the official test by the Prussian government.

In making this test a small quantity of blood only is necessary, and results obtained the same day. In over 3,000 cases tested by this method about 500 post mortems were held, and in every case glander lesions were found. Dr. Eichhorn stated that it is safe to consider this method of diagnosing glanders as 99% accurate, and the reaction in nearly all cases is uniformly distinct. The previous injection of mallein does not seem to affect results in this method of diagnosis, but it is recommended that the blood be taken before mallein is used.

One man can easily handle over fifty tests a day.

Dr. K. F. Meyer, director of the laboratory of the Pennsylvania State Livestock Sanitary Board, was then introduced, and in discussing Dr. Eichhorn's address stated that he had carried out this test in syphilis and about twenty other diseases and considers it a very accurate method of diagnosis. The doctor started the use of this method in 1908 in South Africa, and gave the results of some interesting experiences in that country. He also used this method in diagnosing epizootic lymphangitis. It has also been employed to prove the sale of horse meat in a legal case in Philadelphia. In contagious abortion it can be shown if the animal has once been infected and by this means indicate the necessary precautions to be taken. The vaccine for contagious abortion has been in use for about three years, but Dr. Meyer states that this is not a long enough period to determine results.

Drs. Mangan, Chase, Clayton, Berns and several other members asked Drs. Meyer and Eichhorn interesting questions relative to this method of diagnosis, which were answered by the speakers in a very clear and satisfactory manner.

Dr. Berns cited a number of cases of glanders which apparently had entirely recovered spontaneously.

Dr. McLaughlin also described a case which presented all the well-defined clinical symptoms, which also seems to have made a complete recovery, as this horse is alive and well after a period of three years.

A unanimous rising vote of thanks was tendered Drs. Eichhorn and Meyer for their kindness and courtesy in traveling so far to address our association on this interesting subject.

Dr. Ellis then spoke of the army bill and stated that at the hearing before the Committee on Military Affairs, held on Wednesday, February 28, Captain Hull, Dr. Mohler and Dr. Hoskins were among the strong champions for the bill. This hearing was a very satisfactory one, but Dr. Ellis also stated and urged that as this is the crucial moment every veterinarian should write or telegraph his Representative to support the bill.

Dr. Cheston M. Hoskins supplemented Dr. Ellis' remarks by a concise account of what is being done and appealed to the members of this association to support the bill in every way possible.

Dr. Ellis then moved that this association formulate resolutions and forward the same to Chairman John Hay and Congressmen Patton and Conry, of the House Committee on Military Affairs. This was unanimously carried, and the following resolutions adopted:

"The Veterinary Medical Association of New York City, represented by seventy prominent members of the veterinary profession in meeting assembled, most earnestly petition your committee to favorably report House Bill No. 16843, to increase the efficiency of the veterinary service in the army, as a measure of justice to our profession and of the greatest economic value to our country.

A letter of thanks was also ordered sent to the Hon. Mr. Bradley in recognition of his support of the army bill at the hearing on February 28 before the Committee on Military Affairs.

Dr. Berns extended an invitation to the members to visit his hospital and witness an operation on a "roarer."

Meeting adjourned.

R. S. MacKELLAR, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY—APRIL MEETING.

The regular meeting of the Veterinary Medical Association of New York City was held in the lecture room of the New York American Veterinary College, Dr. Berns presiding.

After the regular routine business had been disposed of Dr. R. W. Ellis gave a very favorable report on the army bill, and also mentioned and commended the remarkable unity of purpose in support of this measure throughout the veterinary profession of this country.

Dr. J. F. De Vine, of Goshen, N. Y., also spoke at some length on the progress of the bill, and asked that a vote be taken to indicate who would promise to write to their Senators urging the support and passage of this important measure.

Drs. Glennon and Smith, representing New Jersey, also gave some interesting information as to the support of the army bill in their State, and stated that all the veterinary associations in New Jersey are doing their utmost to further the passage of the same.

A motion was regularly made, seconded and carried that the same resolutions be forwarded to the Senate Committee on Military Affairs as had been sent to the House Committee on Military Affairs.

Dr. A. Schlesinger, of New York City, was then introduced and read a very interesting and instructive paper on "Military Tuberculosis in a Dog," also exhibiting a tubercular heart with ulcerative endocarditis, and a report on the gross specimens, as well as the microscopic findings, by Dr. Ewing, of Cornell Medical College. The doctor also exhibited excellent photos of this case.

This paper was productive of a very interesting discussion, in which Drs. Ackerman, Blair and several others took an active part.

Mr. Thomas Deaken was then called upon and read a paper entitled "Distemper and Chorea Antitoxins."

Dr. Blair opened the discussion, following the reading of this paper, and spoke of the remarkable fatality of distemper in wild animals; also stated that he had used Mr. Deaken's serum with beneficial results in a toy bull dog suffering from chorea.

Drs. Mangan and Ellis gave some of their experiences with distemper vaccine and antitoxin.

Dr. Chase gave the history of a kennel where seventeen cases of distemper were treated with antitoxin, but with poor results, as nearly all of them died.

A general discussion of the different vaccines and antitoxins used in the treatment of canine distemper followed.

Dr. Ackerman reported having had several cases of dogs which were suddenly taken ill and died in a few days. These

dogs, when first noticed, were dull and stupid, back arched, and, on being handled, would cry out, as if in pain; showed no ropy saliva; conjunctiva anæmic. Post-mortem examination revealed the lungs congested, also the spleen, liver and kidneys. The intestinal tract was apparently normal. The doctor asked if in the opinion of the members these conditions could be produced by some form of poison without affecting the intestinal tract.

Dr. Blair gave it as his opinion that these cases were due to a form of ptomaine poisoning.

Dr. Berns cited a case of a dog from which a number of superficial warts were removed without any apprehension of serious results, but the animal died in twenty-four hours, probably from shock.

Dr. D. J. Mangan then asked the question, "What is the real interpretation of a mallein reaction?"

Dr. E. B. Ackerman led in the discussion of this question, in which a number of the members present took part.

Dr. Blair mentioned a case of a valuable saddle horse which was suspected as being glandered. On the blood being examined in three different laboratories as many different opinions of the results were returned. The mallein test was also used, with a slight rise in temperature and a very small local swelling. This animal had nothing of a suspicious character physically.

This case was also productive of a general discussion, in which a number of members took part.

Dr. Berns reported that the "roarer" which was operated on was doing well and that another had been operated on, standing.

Dr. De Vine also mentioned two cases which were operated on standing and are doing well.

The secretary announced the date of the Alumni Association meeting and dinner as April 30, 1912.

A unanimous vote of thanks was tendered to Dr. Schlesinger and Mr. Deaken for their contributions to the program of the evening.

Adjourned.

R. S. MACKELLAR, *Secretary*.

MAINE VETERINARY MEDICAL ASSOCIATION.

A special meeting of the M. V. M. A. was held at the Augusta House, Augusta, April 3, 1912, at 8 p. m., with President Dr. Wescott in the chair.

Members present answering roll call were Drs. A. Joly, I. L. Salley, C. L. Blakely, G. F. Wescott, H. L. Stevens, W. H. Robinson, E. E. Russell, C. W. Watson, W. H. Lynch and W. L. Mebane. The minutes of the previous meeting were read and approved.

At our January meeting there was a discussion upon "A Uniform Interpretation of Existing Sanitary Laws in Maine." At this special meeting there was also further consideration of this subject.

A committee of three was appointed by the president to draw up resolutions in regard to applying the mallein and tuberculin tests in the State of Maine, consisting of Drs. Cleaves, Salley and Lynch.

The conclusions arrived at by the committee were read by the chairman, Dr. L. S. Cleaves, and the following methods were approved by the M. V. M. A.: In applying the tuberculin test to cattle in this State one initial temperature at the time of infection, followed by subsequent temperatures at the tenth, twelfth, fourteenth and sixteenth hours thereafter, and that said association does not approve of the mallein test as now applied to horses with shipping fever, influenza or any other disease that causes a rise of temperature.

The motion was made and seconded that this association send five dollars toward the erection of a monument to Prof. S. Arloing.

Dr. A. Joly read a very interesting paper on "What Are the Positions in Maine Which Should Be Filled by the Veterinarian?" First, the livestock sanitary commissioner; second, one member of the State Board of Health should be a veterinarian; third, all cities should have a veterinarian on their Boards of Health; fourth, milk inspectors should be veterinarians; fifth, judges of livestock at our State fairs should be veterinarians; sixth, agents for the prevention of cruelty to animals should be veterinarians.

Dr. Joly's paper was followed by a long discussion by all the members present.

Next meeting to be held at Portland, West End Hotel, in July, with papers to be read by Drs. Pope, Blakely, Mebane and Lynch. Meeting adjourned at 10 p. m.

C. W. WATSON, *Secretary*.

ALUMNI ASSOCIATION, U. S. COLLEGE OF VETERINARY SURGEONS.

The seventeenth annual meeting of the Alumni Association of the U. S. College of Veterinary Surgeons of Washington, D. C., was called to order Saturday evening, April 13, 1912, with Dr. H. S. Gamble, '08, in the chair. After a very brief business meeting, the following officers were elected for the ensuing year: Dr. W. S. Pollard, '06, of Baltimore, Md., President; Dr. R. W. Summers, '01, of Buffalo, N. Y., Vice-President, and Dr. Charles M. Mansfield, '07, Secretary and Treasurer. A motion was made and carried to elect this officer for three years instead of one as previously done; this would give the secretary a better opportunity to acquaint himself with his office and the alumni. Dr. Adolph Eichhorn, Senior Bacteriologist of the Bureau of Animal Industry, gave an exceedingly interesting and illustrated talk on Biological Progress in the Veterinary Profession. This talk was very instructive and greatly appreciated. Dr. Mann Page Smith demonstrated by operation the Obliteration of the Lateral Ventricle of the Larynx for the relief of roaring. In this operation he revealed the latest operative technique, using the "Ventricular Burr." This operation is very simple when compared with others for relief of the same condition. The animal was anesthetized by injections of chloral hydrate into peritoneal cavity. The operation proper took four minutes. A light buffet supper was served afterwards, at which time many of the alumni met and renewed their acquaintances of student days. The meeting was a most successful occasion, there being over seventy-five graduate members present from different parts of the country.

C. M. MANSFIELD, *Secretary-Treasurer.*

COMMITTEE ON INFECTIOUS DISEASES, MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION (JULY, 1911).

BY GEORGE H. GLOVER, Chairman.

There has never been a uniform method of making reports in committees like this. It seems to me that other members of the committee should make early report to the chairman and the chairman give a digest of these reports, bringing out the salient features, with the prime object in view of giving a comprehensive but practical statement of disease conditions in the territory

under consideration. Technical papers might appropriately be left out of committee reports on infectious diseases or presented as special reports.

This report was overlooked until it was too late to carry out this idea, and so each member of the committee was asked to make his contribution directly to the association, covering conditions in his district.

During the last year there has been no serious outbreaks of infectious disease in the Missouri Valley. Some new conditions have arisen, and the zealous devotees of veterinary sanitary science have not been idle.

The appearance of dourine in Iowa will, I assume, be reported by Dr. Bemis. Reports from many sections of the country show an alarming increase of rabies. In England rabies was stamped out by compulsory muzzling of dogs. In this country there is a doubt, fostered by some misguided medical conferees, as to the reality of the disease, and this, combined with a maudlin sentiment for the dog, has made the enactment and enforcement of muzzling ordinances in most cases impossible.

The success of the Pasteur treatment cannot be reasonably questioned. An antirabic vaccine for the preventive treatment of rabies has been on the market for nearly two years, and the price for a course of treatment is fifty dollars. There is a firm in Kansas City that makes an antirabic vaccine for animals at one-half this price. There may be other laboratories doing the same thing.

Hog cholera continues to be the great scourge among hogs wherever the hog-raising business is carried on extensively. In the arid regions of the Middle West hog-raising is not a cardinal industry and the disease has not, with few exceptions, become a menace to the business. In spite of the fact that most of the State experiment stations, some private firms and biological houses have been manufacturing hog-cholera serum, yet not enough has been available to supply the demand.

More vigorous steps are being taken, and altogether a vast sum of money has been spent to eradicate the southern cattle tick. What the consummation of this seemingly impossible undertaking would mean to the cattle industry of the South can scarcely be estimated.

While it has been known in a general way that tuberculosis existed to an alarming extent among cattle, and increasing rapidly in hogs, yet we have never until quite recently been in possession of statistics that gave us any sort of a basis for definite

calculation as to the extent of the disease and the economic loss which it has entailed. The Bureau of Animal Industry report for 1908 gives tabulation of 400,008 cattle tested by Federal and State officers, with 37,000 reactors, or 9.25 per cent. Of the reactors 24,984 were slaughtered and 93.39 per cent. were found tuberculous.

From many sources the propaganda of education is reaching the people and having its effect. Federal, State and municipal laws looking to the control of tuberculosis, if too far in advance of the people, will not be enforced, but are in themselves educational. From all sources come evidence of a stronger determination to wage a relentless warfare against the bacillus tuberculosis along scientific lines. The ophthalmic test for tuberculosis, with few exceptions, is not looked upon with favor in this country. Dr. B. F. Kaupp has recently tested all of the hogs on the Colorado State College farm by the subcutaneous method, and reports the test as satisfactory in every way. Dr. D. F. Luckey reports that after giving the intradermal tuberculin test a severe trial and verifying it by the subcutaneous test he is satisfied that it is a decided success and has many advantages. The people are becoming aroused from their lethargy as to the danger from tuberculosis in animals, as well as to its economic importance, and are beginning to have faith in the reliability of the tuberculin test.

Several investigators of repute are working with infectious anemia, and progress made in the last year in determining the etiology and means of control has not been very encouraging. The most important thing in this connection is the report of Dr. L. Van Es in regard to the transmission of infection through the urine. The reported increase in prevalence of this disease is not substantiated, and is probably due to the fact that the disease is more easily and generally recognized.

While most of the States have appropriated liberally for the purpose of eradicating glanders, the disease still prevails. The reason for this lies essentially in the fact that glanders is an insidious disease and from its nature cannot be recognized, save in the typical form and in the last stages. Wonderful strides have been made in the diagnosis of glanders, which portends its early recognition and possible control. At the present time we have no less than seven, more or less, reliable methods of diagnosing glanders. As I remember them, these methods have been revealed in about the following order: First, diagnosis by clinical symptoms and the macroscopic and microscopic study of lesions; sec-

ond, the anaphylactic reaction following the injection of mallein; third, auto-inoculation; fourth, the inoculation of the guinea pig, producing orchitis with chancroid lesion; fifth, the agglutination method (Widal reaction), which means, briefly, clumping or agglutination caused by a chemic substance in the germ called agglutinin with another chemic substance in the serum called agglutinogen; sixth, the discovery of precipitinogen formation in the blood, stimulated by precipitin contained in the product of the germ; seventh, the Wasserman reaction, or fixation of the complement. Of these several methods unfolded it is to be hoped that a practical and reliable method has been found for the certain diagnosis of glanders early in the disease and before the clinical symptoms have appeared.

Statements have been made in newspapers, two or three magazines, and recently in Prof. L. H. Pammels' *Bulletin on Poisonous and Medical Plants of Missouri* assuming that there might be a possible relation between pelagra of the horse and the same disease in man. Having been a close observer of diseases of the horse for several years and doubting the reality of such a disease in the horse, effort has been made to trace the authority for this assumption, but without success. To assume that poisoning of the horse by pathogenic fungi or the toxins of any organism associated with food simulates pelagra in the human is going farther than the writer is willing to go at this time.

Dr. B. F. Kaupp, of the Colorado State College, in his investigation of poultry diseases, has determined the presence of two forms of the so-called white diarrhoea of chickens in Colorado, the bacillary white diarrhoea caused by *Bacterium pullorum* and the coccidian white diarrhoea due to *Coccidium tenellum*. Both of these organisms have been isolated and both types of the disease proven to exist in the Middle West. Dr. Kaupp reports that ordinary diarrhoea of chicks is controlled by sulphocarbolates compound and that white diarrhoea is successfully combatted by keeping the following mixture in their drinking pans from the day they are hatched: Sulphocarbolates compound, 1/2,000, and bichloride of mercury, 1/10,000.

Paraplegia in pigs, lambs and rabbits, with 100 per cent. mortality, and in some respects simulating infantile paralysis of the human, suggests the possibility of a common or closely related etiologic factor. This condition has become so common in the Middle West and has an economic importance and scientific interest that warrants a careful investigation.

K. Van Sande, of Frankfort, reports an interesting experiment in immunizing calves against white scours by treating the mothers during gestation. Of 250 cows injected with 20 c.c. of an extract from the bacillus of white scours 91.63 per cent. of the calves were rendered immune. The author concludes from his experiment that by means of this extract immunity is conferred upon the cows and transmitted to the young, rendering them refractory to the disease from time of birth.

In the realm of toxic herbage very little has been accomplished aside from the naming and identification of plants which observation has shown to be poisonous. The loss of livestock from poisonous plants, especially on the open range, is very heavy. Several species of the so-called loco weeds are proven to be poisonous to horses, cattle and sheep, but the identification of the poison has not been made, neither has a satisfactory remedy for the disease been found. Larkspur continues to exact an annual toll of several millions of dollars in livestock (mostly cattle) in the mountainous districts. Wyoming water hemlock (*Cicuta*), death cama (*Zygadenus*), lupin (*Pupinus*), pathogenic fungi, the leaves of wild cherry, cane and Kaffir corn and many others are poisoning animals at certain seasons of the year.

Dr. O. L. Prien, of the Wyoming Experiment Station, assisted by Dr. H. S. Eakins, is working on the project of woody aster and its disastrous effect upon sheep.

To undertake to write a report covering the subject of infectious diseases, even though it be confined to a hint in this case and a suggestion in that, reminds me of a certain clubwoman who asked my assistance in preparing a paper on the "Agriculture of Europe and America," or again of the man who contemplated writing a book on "Universal Knowledge."

A few suggestions are offered with the hope that they may encourage discussion.

When we consider how recent is the invention of the compound microscope and how the germ theory of disease has completely revolutionized the science of disease and their treatment, we are astounded at the progress made, and the true scientist with becoming modesty admits that as yet we have scarcely more than a glimpse of the complex processes of nature. The glory of the future in curative as well as preventive medicine is in the remedies which nature has provided in the body defenses. The chemic substance excreted by the bacilli of tuberculosis and utilized as tuberculin affords us the means which renders the detection and successful combating of this disease possible. * * * *

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Week Aug. 26, '12	Indianapolis..	C. J. Marshall, Philadelphia
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médecine Veterinaire Fran- çaise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha ..	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	June, 1912.....	Ft. Collins....	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21-22, 1911.	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	Oct. 10-12, 1911.	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	July, 1912....	Springfield ..	L. A. Merillat, Chicago.
Indiana Veterinary Association...	Jan. 15-16, 1913..	Indianapolis ..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	.....	.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n... ..	January, 1913...	Topeka.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	July, 1912.....	Portland.....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young's Bost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n....	Jan. 10-12, 1912..	St. Paul.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n .....	.....	.....	D. L. Luckey,
Montana State V. M. A.....	Jan. 29-30, 1912.	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912....	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	September, 1912.	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 1912 ...	Raleigh.....	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	Fargo.....	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.....	Feb. and Nov...	Lima.....	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	September, 1912.	.....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	June 19, 1912....	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn....	.....	Philadelphia..	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.....	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n .....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	M. Page Smith, Wash., D. C.
Vet. Med. Ass'n of N. J.....	July, 1912.....	Jersey City...	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	E. L. Loblein, New Brunswick.
Veterinary Practitioners' Club...	Monthly.....	Jersey City...	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n	July 19, 1912....	Norfolk, Va...	A. F. Mount, Jersey City.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	Geo. C. Saville, Norfolk.
Washington State V. M. A.....	Jan. 9-10, 1913...	Wenatchee....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Carl Cozier, Bellingham
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville....	Benjamin Gunner, Sewickley.
York Co. (Pa.) V. M. A.....	June 4, 1912....	York.....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

Subscription price, \$3 per annum, invariably in advance; Canadian subscriptions, \$3.25; foreign countries, \$3.60; students while attending college, \$2; Students in Canada, \$2.25; single copies, 25 cents. Copy for advertisements should be received by 10th of month.

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. Make all checks or P. O. orders payable to American Veterinary Review.

THE following extract from a letter recently received from a prominent Chicago business house, is a fair sample of the appreciation of the REVIEW as an advertising medium, frequently expressed by its patrons: "Our business is increasing steadily, and we are satisfied that it is due in a great measure to the results obtained from advertising in the REVIEW, as the many letters we receive bear ample testimony. We are, very sincerely yours, Accuracy Laboratories, per L. H. Reuter."

CANINE DISTEMPER VACCINE has passed the experimental stage, and PARKE, DAVIS & Co. now offer it to the veterinary profession with confidence as to its efficiency. It was only after four years of diligent research work in their laboratories that Dr. N. S. Ferry discovered the germ of canine distemper and announced his findings to the veterinary profession of the world through the AMERICAN VETERINARY REVIEW, July, 1910, naming the organism *Bacillus bronchicanis*; and after further research, he has changed the name of it to *Bacillus bronchisepticus*. (See AMERICAN VETERINARY REVIEW, April, 1912.)

BE prepared for gastric flatulence, a hot weather condition, by having in stock BISMO-NITROX, prepared by the NITROX CHEMICAL Co. This same house prepares NITRO-O-SALT, "for the wound that has not healed." See their adv. top of page 13 (adv. dept.).

THE SORBY VACCINE COMPANY has removed from 157 North Franklin avenue to 105 North Wabash avenue, corner of Washington street. See advertisement on page 7 (adv. dept.).

AMERICAN VETERINARY REVIEW.

JUNE, 1912.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, April 15, 1912.

FOOT-AND-MOUTH DISEASE.—When in England an outbreak of this animal pest makes its appearance, or even when in the Montcal Nebraska es a similar event occurs, the measures to prevent its spreading, to limit its extent, to guard against its contagion, are readily put into force, sanitary regulations are immediately imposed, and the knacker is the master; all the dangerous animals—diseased, contaminated, exposed—are destroyed and their carcasses put in condition where no more harm can be looked for. That England and the United States can protect themselves afterwards by most careful watching, by most severe quarantine, is then comparatively a simple task.

On the Continent of Europe the state of affairs is different. The various countries almost form but one immense field, where at various intervals, here and there, the disease will appear and gradually spread from one to another by the many opportunities and various conditions of the distribution of the virus, and when it has affected such immense numbers of animals that their immediate slaughter would be probably not even the guardian of those which would have escaped, but would mean the complete ruin of the animal wealth of that country, what is to be done?

If this seems exaggerated, let us look only to the sanitary bulletins of some countries and judge. The records of several months back in England for foot-and-mouth disease is "none." The records for the month of December, 1911, in France were: 5,954 barns infected in 2,110 communes belonging to 85 departments. France is divided into 86 departments.

In the presence of such a state of affairs, with the almost impossibility of preventing the disease from entering a country from the next one through the frontier, with the difficult application or the imperfection of sanitary measures, it is easy to appreciate why all imaginable curative treatments may become the order of the day.

The methods of treating animals with foot-and-mouth disease are numerous, and while some certain results may be obtained, and be good in some individuals, or be useless in others, after all, everyone fails in the important necessary object—the *arrest and extinction of the disease*. It would seem as if by law the treating of such animals ought not to be permitted, or at least ought to be so regulated that no danger, no spreading of the disease, could be possible. If such could be, the big charlatanistic advertising that we have been witnessing here of late or such booming means as the inhalation of iodoformed ether would not be allowed under the false pretext of saving the animal's life or arresting the contagion.

* * *

The scientific journals on the Continent have been of late filled, more or less, with the present epizooty, but while many are either satisfied in recording the condition and the number of animals infected, or, again, publishing the new wonders proposed for treatment, others treat of facts which have greater importance and valuable interest, as they intend to throw light on that disease and possibly will give the key to the road which will make it better known, and may bring our bacteriologists to the discovery of proper means to give immunity.

In the German literature I read first an article from Prof.

Hoffmann on the prophylaxy of foot-and-mouth disease, where he insists, in the first place, upon the strict application of most severe sanitary measures, with also the improvements of the hygienic conditions of the animals, especially of those which would avoid the propagation of the buccal lesions to the digital extremities of the animal. For Hoffmann, the ungueal lesions are due to the flow of the virulent saliva along the fore legs, and he advises that means should be taken to collect this saliva, not to let it drop on the bedding of the animal, and also to protect the claws by the application of an antiseptic ointment. Of course, immediate slaughter is imperative. He considers that if the disease appears in an establishment, it is better to prevent its spreading rather than try to fight against it. But to do this he advises to use for the vaccination a saliva whose virulency has been reduced by heating or the addition of an antiseptic. By this a mild form of the disease could be obtained.

Going further, Hoffmann considers that the milk of the sick animals may prove a good preventive and curative agent if obtained aseptically, has its virulency reduced, and is injected aseptically in the peritoneal cavity. He claims to have obtained good results.

With the description of these prophylactic suggestions, Hoffmann has brought out a new form of treatment, which consists in using under the shape of an ointment or in suspension in water of an antiseptic known for some time, the *enguform*, a combination of formol or guaiacol. Local treatment consists in quinine and hot blankets. The results are reported as instantaneous, "Desiccation of the aphtæ, disappearance of the pains, return of the milk secretion." This treatment has nothing new; its principle remains on that of all the classical treatments known. *God* knows how many there are.

* * *

If, after all, the question as treated by Hoffmann does not possess great value, except its actuality, that treated by Dr. L.

V. Betegh is more interesting. It relates to the etiology of the disease.

In his contribution, which I find *résumé*d in *Leclainche's Revue*, he first examines concisely the recent researches on the question, recalling the works of Löffler, Nocard and Roux on the filtrability of the virus. He reminds principally the fact that the virus does not go through a Kitasato's filter, a fact which may give points in relation to the size of the agent of aphtous fever.

Dr. L. V. Betegh has found, in the preparations of Terin, the eosinophile corpuscles which this author considered as the agents of the disease. Betegh had difficulties in finding analogous corpuscles, and those that he found he hesitates to consider as identical to those of Terin.

He has not found in the blood of sick animals the *Cytorrhycles* that Sieged discovered and cultivated.

The investigations of Betegh rested on the following considerations: The virus exists principally in the aphtæ, as their contents diluted to 1-5,000 is still virulent. The agent of the disease is not ultra-microscopic, as it does not go through a Kitasato's filter, and that through this, colloids will pass whose granules are yet visible and measurable. Again, it seems very improbable that the smallest microbes should be smaller than the colloidal granules upon which they feed.

Betegh takes also exception on account of the facts that the microbes of pleuro-pneumonia, and Negri bodies of rabies, pass through filters, having forms which are visible with the microscope, as well as some trypanosomes are also, in an appropriated condition, able to pass through filters.

Examined with a dark room microscope (ultra-microscope), the lymph of aphtæ shows a large number of small, rounded, very mobile corpuscles. Those can be seen in the leucocytes, round the nucleus, in the periphery of the cells, and sometimes in the nucleus itself. These elements may be colored with the Giemsa, according to L. V. Betegh.

After coloration, these corpuscles seem to be formed of a

central part, lightly colored, surrounded by a peripheric zone scarcely tinted and forming a kind of sheath. These corpuscles are sometimes arranged by series of two. They present a kind of prolongation or flagellum.

According to L. V. Betegh, these are the specific agents of aphtous fever.

* * *

Transmission of foot-and-mouth disease to human beings is generally admitted, and if direct inoculation has been successful, the reinoculation from man to bovine had never been realized. An Italian doctor, E. Bertarelli, is the first who realized the experiments of a reinoculation to bovine with aphtous virus taken from man, so records Panisset from the *Centralbl. f. Bakl.*

The disease prevailed amongst a large number of bovines. The disease was mild. Some people caught it. One man was inoculated in opening the mouth of sick animals. He had a few days later cephalalgia, soreness all over, painful sensation in the tongue and palate, and an eruption of small, white, grayish spots over the tongue. He recovered quickly.

A child was then sick also, but recovered after fifteen days' ailment.

Were these true cases of aphtous contagion? Bertarelli inserted in the ear of a calf a little thread humected with the saliva of the first man and inoculated some of the saliva also in the upper lip of a calf. Five days later a typical aphtæ developed on the lip, and on the ear came a swelling with a little ulcerated sore, similar to the manifestations obtained when the experiment is made with the saliva of an aphtous bovine—which, by the way, is sometimes resorted to as a means of vaccination.

For the author, this single experiment shows the possible transmission from bovine to man and vice versa, from inoculated man to bovine.

* * *

DETERMINATION OF SEXES.—To answer more thoroughly, at least as far as I could, to an inquiry of one of my correspond-

ents, I alluded lately a report relating to the influence of adrenaline in the solution of this problem of origin of sexes, which has already given rise to so many researches and been the object of a long enumeration of the solutions proposed. In the *Presse Medicale*, one of my favorites for good information, I have come across the analysis of the researches instituted since 1871 by Prof. T. Ciesielski (from Leopold), in which the discovery of the *immutable law of nature* according to which males and females are formed, is laid out.

The experiments of Ciesielski were first made with plants, on hemp, which, as every one knows, is a dioecious plant. He first controlled the popular sayings according to which hemp, sown thick, would give more male stalks than if it was sown thin; or, again, according to which the seeds would give a different sex by following the periods of moon changes. The results were negative.

During five years Ciesielski varied his experiments; they all failed, thus showing that the determination of the sexes did not depend on external influences upon the development of the seed. It is at the moment of the fecundation that the determination of the sex is influenced. New experiments were made and final conclusive results obtained.

In land of his own, Ciesielski sowed, in three different places, three fields of hemp; as soon as on the plants the sex was manifested, he removed from two of the fields all the male plants and had the third one surrounded with fences, leaving in it only the male plants. Then he himself applied artificial fecundation of the female plants with pollen taken from the males, with this difference, however: that the fecundation was in one part of the field done only in the morning at sun rising, and in another in the evening after sunset. Gathering the grains from these two fields, he sowed them the following year. Those which came from the plants fecundated at sun rising gave 85.6 per cent. of male plants; the others, on the contrary, 92 per cent. of females.

Carrying the experiments further, female plants were put in pots and placed in the different rooms. On these a different

artificial fecundation was performed. Three pots of one room were fecundated with pollen taken from the stamina, bursted but not widely open (recent or fresh pollen). The pots of the other room were fecundated with pollen gathered in the morning and kept until midday in paper. From the three first pots 120 grains were obtained and 96 only from the others. Sown the following year, the 120 seeds gave 112 plants with only 6 females; the 96 seeds gave 89, all females.

* * *

After having obtained such results with plants, animals were taken for experiments.

Rabbits.—A black female was covered by a white male, the same day by a gray male, and the next day after 18 hours by the first white male. The doe rabbit had a litter of five little ones, four females and one male. One white and one white and black female came from the first coit with the white rabbit, one black and one gray with black spots came from the gray rabbit, and one white male with black spots was from the second coit with the white rabbit.

Dogs.—A white female was covered successively by a reddish male and then the same day by a white one. The following day, about 19 hours after, she again received the reddish male. She had three pups, one red female, one white and one male, spotted.

Therefore, in general, after a single connection with a rabbit, abstemious, which has had no coit since a few days, a doe will give birth to two or three females; and if the rabbit has performed coit the day before, on the contrary two or three males will be born. Likewise in dogs, a single coit gives ordinarily one or two females, if the slut has been fecundated by a dog that has not coited since several days; or, again, one or two males if the dog has covered another slut the day before.

This has also been proved by Ciesielski in horses and with bulls. Looking into the registers of Mikolaow-Drohowyze

breeding establishment, he has noticed that, covered by a stallion which had not mounted any since several days before, the mares had only female products, while, on the contrary, mares covered by a stallion which had done service the day before gave birth to males.

Having bought a bull and lending him to county people, it was observed that the products given by this bull, out of 156 cows that he covered in two years, there were but two exceptions to the rule.

And, says Ciesielski, "I add that since thirty-three years, I have often had the possibility of experimenting this law in man, by giving to many relations, friends and even strangers disinterested advices, whose essential object I did not reveal, but which I seemed to attach much importance. In all the cases where these advices were exactly followed, the result has always been what was expected."

Conclusions: The sexual differentiation takes place at the time of fecundation in plants, in animals and in man, and it takes place according to one single law, viz.: *Fecundating elements (pollen or spermatozoids), fresh, not more than twenty-four hours, give products of male sex; those elements more than twenty-four hours old promote the formation of female sex.*

If this theory and this law are correct, breeders can derive great advantage according to their desires.

* * *

BIBLIOGRAPHY.—"*Parasitologie des Animaux Domestiques*" (Parasitology of Domestic Animals), by Dr. Maurice Neveu-Lemaire, Professor at the Faculty of Medicine, Member of the Society of Veterinary Sciences of Lyon (Rhône).

There are few sciences which have in late years made as extensive and rapid progresses as that of parasitology, and the publications that relate to it are day by day more numerous. The important studies and the new discoveries that have been made

in the last fifteen years have completely transformed the etiology and the pathogeny of many of the affections of man and animals.

The author was among the first to gather together the facts which related to parasites of men, and the success that his first work received has induced him to publish the present book, where the *non-bacterian parasitic diseases* of animals with their parasites are considered.

The usefulness of such work cannot be contested. The writings concerning the parasitology of domestic animals are spread in isolated publications which treat of this special subject, or in periodicals more or less read. To collect all those documents together, to arrange them and study them with a clear and precise method, was indispensable, and it is with that object in view that Prof. Neveu-Lemaire has written this work which, no doubt, is going to be of immense advantage to professional parasitologists and naturalists but also and principally to veterinarians; students and practitioners will consult it with great interest, and it will soon find its way into the library of all those who wish to be well posted in parasitology of domestic animals.

The plan of the work is simple. The first part treats of vegetable parasites, the second of animal. In each part the various parasites are studied, as much as possible in their botanical or their zoological order, and after the description of each one its pathogenous action is indicated.

At the end of the principal paragraphs there is exposed, in a concise manner, the simplest methods which will permit the practitioner to make, with his microscope and a few reacting agents, the parasitologic diagnosis. Finally the book ends with the list of the domestic animals and their parasites, arranged according to the various organs where they are found.

Illustrated with 770 plates, this book covers over 1,200 pages of easily read matter, well printed and forming a handsome volume whose contents are divided into four chapters: 1. Pathogenous fungi and mycosis. 2. Pathogenous protozoa and protozoosis. 3. Parasite worms and helminthiasis. 4. Anthropod parasites, scabs and insects. The book costs 16 francs and can

be had from J. Lamarre & Co., Editeurs, 4, Rue Antoine-Dubois, Paris, France.

* * *

“*Internal Pathology—Mediastinean, Heart, Blood Vessels, Blood*” (Pathologie Interne, Mediastin, Coeur, Vaisseaux Sang), by Prof. Cadeac.

It is about one year since we had the opportunity to call attention to a new volume of the second edition of this part of the Veterinary Encyclopedia of the learned Professor of Lyon. The fifth volume that is before us is a continuation of the work. With the conclusion of the thoracic organs, it presents to the reader the diseases of the heart, of the blood vessels, and begins those of the blood proper. The consideration of the circulatory apparatus includes the varieties of pericarditis in the first chapter. In the second the myocarditis, hypertrophy, cardiac dilatation, fatty degeneration, angina pectoris, rupture, tumors and parasites. The third chapter treats of endocarditis in its various forms. The fourth chapter covers the arteritis, the aneurisms, and the many forms of thromboses. Splenomegaly, with hemorrhages of the spleen, abscesses, necrosis, and tumors occupy a special chapter.

The book is presented by the house of J. B. Bailliere & Sons, and with its numerous illustrations continues the gigantic work undertaken by Prof. Cadeac, who, we understand, is hard at work to complete the publication of this second edition.

* * *

ACKNOWLEDGMENTS.—*Cornell Veterinarian*, No. 1, No. 2.

The *Daily Picayune* of New Orleans, with the excellent biography of Dr. Dalrymple, by Dr. D. Arthur Hughes, extracted from the *Veterinary Journal* of London.

The “Proceedings of the American Veterinary Medical Association” (Meetings of 1911). The “Papers and Proceedings of the New York State Veterinary Medical Society”; handsome little pamphlet of 130 pages where the 21st annual meeting is recorded.

“Results Obtained in the Eradication of Tuberculosis by the Use of Tuberc. Vaccine and Bang System,” by S. H. Gilliland, V.M.D., M.D.

“Report of the Fifteenth Annual Meeting of the United States Live Stock Sanitary Association,” a pamphlet where in few pages the great amount of work done at the meeting is condensed, and which I have been pleased to notice in my preceding Chronicle.

* * *

SPECIAL ADDENDA.—I was in hopes that the program of the celebration of the 150th anniversary of the foundation of the first veterinary school at Lyon would be issued before this, but, notwithstanding all my inquiries, all I can gather is that it will take place in the very first days of June. The celebration, I am told, promises to be a great success, and the inauguration of the monument erected to Prof. Arloing will be witnessed by many. The subscription list has been very successful, and among the donators I find those of many American institutions, the American Veterinary Medical Association, the AMERICAN VETERINARY REVIEW, the veterinary medical associations of New York City, of New York State, of Schuylkill Valley, of Massachusetts, of Colorado, of Missouri Valley, of Washington State College, and others, all of which have been acknowledged by the committee. The Veterinary Museum organized by Colonel Aureggio will also be a very great attraction at the celebration.

A. L.

THE FIGHT FOR THE ARMY VETERINARY BILL IS NOW IN THE SENATE.

The battle for the passage of the Army Veterinary Bill is now half won. We are in the thickest and hottest part of the fight. Consequently, now is the time when we must avail ourselves of every resource until the musketry and cannonading are over and we find ourselves victors. But mark you, we are in the roughest,

toughest, most straining part of the terrific fight and we have the worst part of the work yet to do.

The facts are these: The bill "to consolidate the veterinary service, United States Army, and increase its efficiency," H. R. 16843, as a result of frequent conferences between the War Department, the House Committee on Military Affairs and our professional representatives, in recast, modified form, was favorably reported out of the committee of the Lower House April 26. That Committee says, in its transmittal. "Your committee, after giving the bill very careful consideration, is of the opinion that it should pass in the interest of the efficiency of the service." In closing the printed document transmitting the recast bill to the floor of the House of Representatives, the Military Committee said: "It is thought that it will greatly improve the service to give the rank provided for in this bill, and in that way much money will be saved by virtue of increased efficiency in this service. *The veterinary surgeons of this country are a body of highly trained, intelligent men who have made and are making great strides towards progress in their profession, and it is not reasonable to expect that the Government can secure the best talent of the profession unless some fitting and substantial recognition is given it.*" That is just what we are fighting for—recognition in the army as a profession. The final statement of the Committee is a frank admission of our contention that, in the War Department, our brothers have no recognition at present as professional men.

In this issue of the REVIEW, under the "Army Veterinary Department," we print H. R. 16,843, as recast by the Military Committee, together with cogent remarks on the main changes made in the bill as introduced in January by Mr. Difenderfer, of Pennsylvania. No repetition of that matter is needed here. However, the members of the profession throughout the country should know: (1) That if the bill should pass, even in its modified form approved by the Military Committee of the House, we will at last have won, after nearly half a century of warfare, recognition as a profession in the army; (2) our men will be

commissioned officers with rank equal to that of the dentists, whose bill passed a year ago, namely, first and second lieutenantcies; (3) the stigma at present marring our profession in the army will be removed, and snubbing of our members, in and out of the army, because of it will be stopped.

The bill has very bright prospects of passing the House: first, because of its favorable recommendation by the Military Committee; second, because the Committee on Legislation of the American Veterinary Medical Association reports that a sufficient number of Congressmen in all states of the Union have pledged themselves to their constituencies to vote for the bill, which should ensure its passage by that body. But its prospects in the Senate are an unknown quantity, though certainly far from bright. The bill in the Senate, S. 5792, similar to the House bill, has been turned over by the Senate Military Committee to a sub-committee, consisting of Senators Bristow of Kansas, Jones of Washington and Clark of Arkansas. It is of the utmost importance that the profession in those states should exert itself to win, first of all, those Senators for the bill. The securing of the sub-committee will persuade the Senate Military Committee to favorably report the bill to the Senate. The Senate Military Committee consists of Dupont of Delaware (Chairman), Warren of Wyoming, Dixon of Montana, Briggs of New Jersey, Brown of Nebraska, Guggenheim of Colorado, Bristow of Kansas, Jones of Washington, Lorimer of Illinois, Foster of Louisiana, Johnson of Alabama, Clark of Arkansas, Taylor of Tennessee, Chamberlain of Oregon, Hitchcock of Nebraska, Williams of Mississippi. On these men our heaviest artillery should be trained. If we win them, we win the bill. The stain of distrust, the blockade of our progress in the army, the ironclad restraint which has hitherto been placed upon us in military circles, will be removed. We will banish forever the opinions held in the army that the veterinarian is nothing and deserves nothing. We must battle our way through the sub-committee of the Senate; then the Senate Military Committee and the Senate itself. The goal is in sight. Push; press hard; struggle along and we will win.

OUR FEDERAL MEAT INSPECTION SERVICE.

Newspaper columns throughout the country have recently been filled with articles in reference to the necessity for an investigation of our federal meat inspection service; brought about, it is said, through criticisms made by Mrs. Caroline Bartlett Crane, and by Dr. Albert Leffingwell in his book, "American Meat," published in England, in 1910. Chief Melvin's explanation of the sane translation of the federal meat inspection law, and its practical application on the floor of the abattoir, as given in a recent public statement, is reproduced on page 374 of this issue of the REVIEW, lest any of our readers have not seen a copy of it. It does seem presumptuous to criticise a system of meat inspection that has been based on the judgment of eminent scientists and conceded to be the best in the world, or to question the integrity of the officials administering the service, and the REVIEW awaits with confidence the outcome of such an investigation.

PRESIDENT BRENTON VISITS THE CONVENTION CITY.

Returning from a recent visit to Indianapolis, President Brenton, of the A. V. M. A., reports that the local committee are preparing for the largest gathering that the national organization has ever had. The "Claypool Hotel" (A. V. M. A. Headquarters), impresses President Brenton as being very like the Sherman House in Chicago. That being so, those stopping at headquarters will have excellent accommodations. "Das Deutsche Haus," where the sessions are to be held, is but a few blocks from hotel headquarters, a condition which will add much to the convenience and comfort of those in attendance. Its main hall has a seating capacity of 1,600, with excellent acoustic conditions. There are two other rooms with seating capacity of from 250 to 350 each, which will serve nicely for section work. There are also several committee rooms, and rooms suitable for exhibits. These conveniences, with a good cafe in connection

where excellent meals are served, presents an ideal meeting-place to look forward to. Clinics can be arranged for to good advantage at the veterinary college amphitheatre, and a hearty welcome awaits the attendants of the A. V. M. A. meeting at Indianapolis, and the ladies will be well looked after.

IN MEMORIAM—LEONARD PEARSON.—This is the title of a clearly printed, neatly bound little volume from the Lippincott press, bearing as a frontispiece a striking likeness of the late Leonard Pearson, and containing, in addition to a biographical sketch of his life and eight addresses in connection with the memorial exercises, forty-seven tributes to his name from great men all over the world, from veterinary journals and from scientific and veterinary organizations. It was a happy thought that prompted the grouping together of all these expressions of appreciation of the greatness, the nobility and worthiness of this gentle, unassuming American veterinarian in one volume; a volume that will be cherished by the present generation of veterinarians and handed down to future generations tenderly and reverently.

DISCUSSION OF BREEDING PROBLEMS OPENED.—In our May issue we referred editorially to the advantages to veterinarians to be gained by a careful study of breeding problems, offering the pages of the REVIEW for their discussion by the veterinary profession and promising to have the subject opened by Prof. L. L. Lewis, of the Oklahoma Agricultural Experiment Station. Prof. Lewis' paper, entitled "Artificial Insemination," appears on page 278 of this issue and will prove interesting and instructive reading. A series of papers on breeding problems will follow in subsequent issues.

DR. JOHN F. PLANZ, of Akron, Ohio, has accepted the position in veterinary surgery and obstetrics made vacant by the resignation of Dr. J. H. McNeil at the College of Veterinary Medicine, Ohio State University.

ORIGINAL ARTICLES.

ARTIFICIAL INSEMINATION.*

BY PROF. L. L. LEWIS, VETERINARIAN AND BACTERIOLOGIST TO OKLAHOMA
AGRICULTURAL EXPERIMENT STATION, STILLWATER, OKLAHOMA.

The veterinarian should never neglect the scientific and technical side of his profession. Yet, we wonder if the profession does not now rightfully include more than was included in the college curriculum of a few years ago. There certainly is no one better fitted by training to undertake general studies in animal husbandry than the veterinarian, and his field of usefulness to the agricultural interests should include every phase of animal husbandry, as well as the treatment of animal diseases. If the veterinarian will only identify himself with the questions relating to animal breeding he will not only increase his usefulness to his clients, but will find a field that is entirely worthy of his efforts from a scientific standpoint.

It should not be presumed that our knowledge of the physiology of reproduction is complete, although there is a great mass of reliable data available. Logically, a study of animal breeding begins with a study of the reproductive organs and cells, the conditions influencing the production of these cells, and the factors determining their vitality. Many of the problems of animal breeding have been treated as if there was nothing to be learned, or else nothing to be gained in a practical way by scientific investigation and study. Animal breeding involves more than the proper selection of sires and dams. Stock breeding should be placed on a scientific basis, and there are

great numbers of stockmen ready to avail themselves of service in this connection.

One of the questions of prime importance is the study of the vitality of the sperm cell, as well as the effect of continuous service on the number and vitality of these cells. Since some breeders have been using artificial means of introducing the sperm cells into the organs of the female, the question of vitality is of interest in order to determine if there are apparent reasons why the practice should or should not be successful. A study of the vitality of the sperm cell from the horse gives one good reasons to expect that the semen can be successfully transferred by instruments to mares that are ready to breed. By collecting semen from the vagina, or from a breeding bag, and making microscopic examinations at intervals, it will be found that the sperm cells will show movement for from four to eight hours, depending upon the conditions under which the semen is kept. Semen from a vigorous horse shows apparently but little change for two or three hours after it is collected. This being true, it would seem that a successful transfer of semen could be made into the organs of animals to be bred when not more than five minutes of time is necessary for the work. The sperm cell is exceedingly sensitive to the presence of any chemicals, so that cleanliness becomes an important factor in this work. The syringe, of whatever pattern used, should be kept clean. The use of a breeding bag for collecting the semen is unnecessary, as the semen may be collected by instrument, either from vagina or womb. However, if the stallion or Jack does not object to serving with the breeding bag its use makes the work easier, as the semen is in a convenient receptacle, and unmixed with any of the vaginal secretions of the mare.

There is no doubt but that there have been too many extravagant claims made regarding the success of artificial insemination, the length of time the sperm cells will live under artificial conditions, and the great distances it has been transferred and then used successfully. Some of these exaggerated statements are enough to make one having any knowledge of biology dis-

credit them without further question, but over enthusiastic statements should not prejudice one against the study of the general question. Many breeders are successfully using artificial means of introducing the semen. The process is commonly called artificial impregnation, but a better term would be artificial insemination. The mere fact that the semen can be transferred successfully by means of instruments has no value except as a matter of scientific interest unless there are practical reasons for attempting the work. A brief mention of the practical side of the question is of interest.

The number of sperm cells present in the semen of a vigorous stallion will vary from one hundred and fifty thousand to two hundred and fifty thousand per cubic millimeter, and the semen from one service may vary from fifty to one hundred cubic centimeters. There may be as many as twenty-five billion of sperm cells present in the semen from one service. Since only one service of the cells is necessary for fertilizing the ovum, there is no reason, so far as numbers of spermatozoa is concerned, why a few cubic centimeters of the semen introduced by capsule or syringe would not serve the same purpose as direct service.

Perhaps the point of greatest interest is the effect of continuous service on the number and vitality of the sperm cells. In one set of observations along this line the number of spermatozoa present at the beginning of the experiment was 131,000 per cubic millimeter, with a vitality extending over nine hours. At the end of nine days, one service daily, the number of sperm cells per cubic millimeter was 5,800, and vitality continued for three hours. The horse used was a heavy, sluggish draft stallion. In another set of observations, where a vigorous young grade stallion was used, two services were given daily from December 14 to December 24, inclusive. The normal condition of semen for this horse showed about 200,000 sperm cells per cubic millimeter, and vitality of from eight to nine hours. A sample of the semen secured from the twentieth service showed 23,000 sperm cells per cubic millimeter, with a vitality of not more than one and one-half hours.

Where the per cent. of foals obtained under the best of conditions is not high there should be no surprise when this number falls to a very low point, as compared with the number of services given when the stallion is bred too frequently. By giving fewer services the vigor of the sire may be kept at the highest degree of perfection, and by the careful transfer of semen possessing cells of high vitality the number of foals secured will be much greater than by the direct service method, where one and two services are given daily. However, many failures will result, whatever method is used to introduce the fertilizing element, but with fewer services for the sire and more attention given to the dam in such matters of better feed and care, and less fatiguing work, there can be no doubt of the results being more satisfactory than they are at present.

HORSE CENSUS.—According to a recent census, we have in the United States, 23,778,481 horses. The number compares with other countries as follows: Canada, 2,303,725; Central America, 27,873,328; South America, 9,155,425; Austro-Hungary, 4,196,634; European Russia, 23,548,000; United Kingdom, 2,253,418. Total of Europe, 43,502,876. There has been an increase of 15,108,000 horses on the farms in the United States during the past forty-five years, and an increase in valuation during that period of \$1,853,770. This immense increase in valuation is, of course, not wholly due to the increase in numbers, as the average valuation per head has advanced during that period from \$59.05 to \$105.94, the total farm value of the 20,509,000 horses on the farms in the United States being \$2,172,694,000 on January 1, 1912. There are over 1,000,000 horses on the farms of each of the following States: Iowa, Missouri, Nebraska, Kansas and Texas; and New York State has upon its farms 609,000 horses, more than that of any other North Atlantic State. The progress in this immense industry is reported as generally favorable throughout the country at the present time and veterinarians are urged to concentrate their thoughts in an endeavor to evolve plans of economy that will tend to further its progress.

BIOLOGICAL PRODUCTS.*

BY CHARLES H. HIGGINS, D.V.S., F.R.M.S., PATHOLOGIST, DEPARTMENT OF AGRICULTURE, OTTAWA, CAN.

The title of my paper confronts us with a large variety of preparations, some of which have secured an enviable reputation in the diagnosis, prevention and treatment of disease; many are undergoing the evolutionary period, a few of which will eventually be discarded, while others have been wholly unable to survive the vicissitudes of either practical or theoretical experimentation.

It is not my purpose to mention individual products and indicate the results, beneficial or otherwise, following their use in the diagnosis, prevention or treatment of diseased conditions. My effort, however, will be directed to the consideration of certain of the more important problems associated with their history and manufacture. The special indications for their use, the methods of application, dosage, and the results obtained therefrom naturally belong to the clinician, although their origin and the technicalities surrounding their preparation are usually the result of detailed laboratory study.

I desire to premise my remarks by the statement that the development of my theme will be from the very broad standpoint of preventive medicine as related to public health problems, and, will in a general way include all biological products, whether the minor details refer to the more restricted acceptation of the term as embracing comparative or human medicine. We cannot separate these products into distinct classes; the one for animals and another for man, as both men and animals have benefited greatly from their preparation, and both are also interdependent for their very existence. The problems in dealing

*Read before The Canadian Public Health Association, at Montreal, December, 1911, and reprinted from the Public Health Journal, State Medicine and Sanitary Review.

with diseased conditions in either case are based on the same general principles and infectious disorders occurring in both are treated similarly.

Biological products as we now interpret the term are preparations designed for the diagnosis, prevention and treatment of diseased conditions in men and animals caused by specific infectious agents or poisons. They include normal sera, antitoxic sera, antibacterial, sera, toxines, attenuated vira and bacterial vaccines.

To enumerate all of the products which are to-day available would require much more time than is at our command and it is further questionable whether such a course would be of interest to members of this section, all of whom are more or less familiar with the more important of those in common use. We are, however, directly concerned with their evolution, and the desired laboratory requirements for their manufacture and subsequent testing are details of vital importance in the consideration of the broader aspects of their relationship to public health problems.

The development of any new field of science is largely dependent upon the individuality of the workers and the problems with which they are forced to contend. The developments in the preparation of biological products offer no exception to this general rule. Leaving out of consideration the introduction of small-pox vaccine by Jenner, their history is inseparable from the advances of bacteriological knowledge, and this knowledge is in turn associated with the improvements made in the grinding of microscopic lenses and the mechanical construction of compound microscopes.

Pollender in 1849 and Davaine in 1850 expressed the opinion that anthrax in animals was closely related to the presence of what they termed sticks and rods in the blood from cases of this disease. It was, therefore, but a step to the definite proof by Koch in 1875, when he described the morphology of the organism, that these bodies were the cause of this disease.

Pasteur, experimenting with chicken cholera in 1880, found

that the causative organism could be cultivated in a specially prepared chicken broth. Returning to his laboratory after an absence of a few days, he observed that cultures made prior to his departure no longer produced the disease in susceptible fowl. Securing a fresh organism from another outbreak, he found that the fowls previously inoculated did not contract the disease, although susceptible fowl not so inoculated became affected and died in the usual period. He was thus able to demonstrate, largely by accident, that cultures of the bacteria responsible for the ravages caused by this disease could be attenuated and that such attenuated cultures were capable of establishing resistance or immunity in susceptible animals when used in suitable doses. Applying this knowledge to anthrax, he was able, in 1881, to prepare an attenuated virus which conferred immunity against this affection. Anthrax vaccine is now a commonly used biological product, although there is danger, and serious losses have been reported following the use of an improperly prepared or impotent product. In connection with these attenuated vira it is of interest to note that investigators have shown that the inoculation with an organism usually harmless, may be capable of conferring a passive immunity against a disease. For example, the *Bacillus pyocyaneus* confers immunity in sheep against anthrax for a limited period.

From this groundwork on immunity and the constant increase in our bacteriological knowledge we have witnessed the introduction and extensive use of bacterial filtrates. Some of these such as tuberculin, introduced by Koch, and mallein, introduced by Von Preusse and Kalning, are well known diagnostic agents and are often improperly called toxines. With the preparation of the bacterial filtrates just mentioned, which we now know to be thermo-stable, further experiments indicated the development of true toxines such as diphtheria and tetanus which are not thermo-stable. The unheated sterile filtrates from these latter organisms were found to be fatal in extremely minute quantities when injected beneath the skin of suitable experimental animals. With the knowledge that recovery from an attack of

diphtheria conferred an immunity against a subsequent attack, it was considered that the introduction of the toxine into the body of an animal in non-fatal doses would cause the formation of a neutralizing substance or anti-toxine and that this in turn would be capable of destroying the poisonous effect of the toxine. This theory was sound and Von Behring prepared an anti-toxic serum from dogs and sheep. Aronsohn used goats and later Roux employed horses. While the use of the smaller animals established the general principle of the formation of an anti-toxic substance in the blood of a treated animal, the expense involved in the preparation of this serum would almost prohibit its general application if necessity required the use of the smaller animals. We may, therefore, consider that while Von Behring was the originator of the method we must credit Roux, a pupil of Pasteur, with the practical solution of the means by which an adequate amount of serum could be secured to meet the demands for controlling diphtheria in the human.

Anti-bacterial and anti-toxic sera are prepared by inducing a high degree of immunity in the larger animals against the disease for which the anti-bacterial or anti-toxic sera are desired. The horse being a very tractable animal has proven the most satisfactory and is the one most frequently used. The horse was selected as a large amount of serum is available once the immunizing process has reached a satisfactory point. Great care, however, must be exercised in the selection and subsequent care of the animals required for experiment. Even with the most painstaking care one is not sure of securing a subject, the serum from which after the requisite treatment will show a satisfactory degree of potency. In some instances as many as an average of six horses are required to obtain one giving a satisfactory serum. When horses are immunized in the preparation of anti-plague serum, even a greater number may be required.

The anti-bacterial and anti-toxic sera are now well and favorably known, having demonstrated their efficiency in preventing and controlling losses from the diseases for which they are prepared.

With the preparation of these sera as with the preparation of any new medicinal agent it was but natural that some means of standardization should be sought. The studies of Ehrlich and the elaboration of his side chain theory explained the chemical reactions involved in the process and he was first to take the necessary steps toward the standardization of anti-diphtheretic serum. Rosenau and Anderson in endeavoring to establish a unit on which they could always depend have given us an elaborate process for accomplishing this end. They found that in the dry state serum would retain a certain strength for an almost indefinite period if kept in a vacuum and at a constant temperature. It is their standard unit which is now used for the guidance of manufacturers in the United States and a suitable amount is supplied for the use of each at certain stated periods. Their method of testing requires accurately graduated glassware, a standard toxine which must be made by growing a suitable strain of the diphtheria organism on a special liquid medium. and an adequate supply of guinea pigs of 250 grammes in weight.

I may here mention that the details which must be observed when manufacturing any of the biological products requiring the use of large cultures are very exacting. We must not only have a pure culture of the organism and a suitable medium, but we must have a strain capable of rapid growth on the surface of a liquid medium. All strains do not possess this feature. For some purposes solid media may be used, but for routine work we must accustom any given organism with which we may be working to the artificial conditions necessary for our particular requirements. The strongest diphtheria toxine producer is not necessarily the most virulent culture, nor are we able to produce a satisfactory mallein or tuberculin from the most virulent strains of their corresponding organisms. Detailed experiments must be carried out with a large number of strains before we can hope to secure one suitable for the production of the large amounts of chemical by-products required in a limited amount of time.

Many curious phenomena are observed in growing large cultures for any of these purposes. One of the most annoying is the ease with which large cultures of certain bacteria become contaminated while very crude bacteriological technique will suffice in preventing contamination where other organisms are used. In the preparation of tuberculin, contaminations are rare while the opposite is true when dealing with *Bacillus mallei* in the preparation of mallein. Large cultures of diphtheria are also contaminated with organisms which seldom or never appear in other special or routine work where the same incubating chamber is used. These occurrences are difficult to explain. I have considered that the aroma coming from a large culture has an important bearing on this feature. All bacteriologists are familiar with the odor coming from cultures commonly seen in any laboratory and we similarly have distinct characteristic odors given off from cultures of *Bacillus mallei*, *Bacillus diphtheriæ*, bacillus tuberculosis and others. So important are these odors that a laboratory worker with a delicate olfactory organ can distinguish a pure from an impure culture. Under such conditions, where we have no diagnostic method of staining I consider the microscope examination a confirmatory procedure and not a primary factor. I am further of the opinion that the aroma has a direct relationship to the efficacy of any of these bacterial products.

Normal sera, or the sera from a normal or untreated animal may be used with more or less benefit in diseased conditions which are but slightly or wholly non-infective to the animal from which they are taken, such as normal horse serum for tuberculosis. Normal bovine serum has been used with a certain degree of success in a few cases of human glanders and is worthy of further trial. Normal sera from other animals such as goats, hogs, dogs, etc., will doubtless be used just as soon as a pioneer therapist has the courage to determine their value in suitable cases and an individual versed in the technique of preparing the serum join forces. While the occasions for the use of normal sera are naturally somewhat limited, they are deserving of more attention than they have heretofore received.

Killed cultures of bacteria, now known as bacterial vaccines have occupied a very important place among biological products for many years. None of these have received greater attention than that known as Haffkine's prophylactic consisting of the killed cultures of bubonic plague. The bacterial vaccine receiving the most attention at the present time is the anti-typhoid vaccine, the efficacy of which as a prophylactic is well established from the numerous statistics available.

With the further development of bacterial vaccines we have, from a bacteriological standpoint, an extensive field opened before us. These products require great skill in their preparation if they are autogenous in character and properly standardized. In a large measure their success depends, as with other products, upon the individual skill of the producer. All who are trained in the art and science of medicine do not make good clinicians, nor do they become equally proficient in the various specialties. Likewise, all pathologists do not acquire an equal proficiency in the preparation of these vaccines. The results are largely dependent on individual idiosyncrasies and judgment. The combined or polyvalent vaccines appear to be the most promising and will undoubtedly be the ones receiving the most general use. They have the advantage of being prepared from several strains of the same organism and are intended for use in those conditions where the infecting agent is similar to the types from which they are manufactured.

With respect to the necessary facilities required for the preparation of biological products, I will add but a few words. The buildings need not be expensive nor elaborately equipped. They should be spacious, well lighted, well ventilated and provide plenty of room for the laboratory workers and the animals required in the conduct of the work. The details must be considered individually in each instance, according to the work to be undertaken. All laboratory workers have a certain pride in their surroundings and it is to be expected, considering the risks constantly taken while working with large cultures of the most virulent infectious agents in the preparation of biological

products that we should desire to safeguard our own existence in every possible manner. In no line of endeavor is the accidental hazard so great. This feature should be considered in the construction and equipment of buildings for the purpose.

You are aware that a biological product prepared by a certain manufacturer always gives uniform results and is seldom or never followed by after effects of a serious or annoying nature. When this particular product is for any reason unavailable, and a substitute is used in its stead, less favorable results follow and serious after effects may occur. The repeated occurrence of similar difficulties may be anticipated until it becomes the business of some properly constituted authority to examine all such products manufactured or offered for sale in Canada. The manufacture of the products now used in Canada provide a source of revenue to individuals and companies, and, therefore, the potency is to a very large degree dependent upon the integrity of these individuals or companies. On the whole the integrity displayed has been of a very commendable order, although we are aware that the trade relations of this country were seriously jeopardized a few years ago by an outbreak of foot-and-mouth disease in the country to the south of us which was finally attributed to the use of a contaminated virus in the preparation of small-pox vaccine.

At the present time, the biological products available for use in Canada, with a very few exceptions, are imported, and there are at present no restrictions exercised over the facilities provided for use in connection with their manufacture, nor is any standard established to which they must conform before being offered for sale. As a laboratory worker with an intimate knowledge and an extended experience in the manufacture of certain biological preparations I am convinced that there should be some restrictions placed, not only on their sale, but on the safety of the surroundings and the conditions maintained during their manufacture.

Will meet you at Indianapolis, August 26-27-28-29-30.

RINDERPEST AS OBSERVED IN THE PHILIPPINES.

BY WALTER SORRELL, D.V.S., FORMERLY VETERINARIAN SERUM LAB., MANILA,
AND FRED C. CATER, D.V.S., FORMERLY VETERINARIAN, DEPT. AGR.,
MANILA, P. I.

The first record of the outbreak of rinderpest in the Philippine Islands was during 1882, when the Spanish authorities took cognizance of and issued a bulletin on the same, while ancient literature shows the disease to have existed in the steppes of Oriental Europe and Central Asia since the most remote periods. In the fourth century of our area the disease was introduced into Western Europe by immigration from the former territories and owing to the incessant wars of that period was spread to almost every country in Europe. During the last half of the eighteenth century Germany alone lost thirty million cattle and the whole of Europe two hundred million bovines from this scourge. The disease was probably introduced in the Philippines from China, and since the time of 1882 has remained endemic in the alluvial soils and damp, partially inundated coast lines. The chaotic condition in animal diseases that prevailed to confront veterinarians in the archipelago following occupation and subsequent establishment of civic government was an almost insurmountable situation, but with careful procedure no grave errors were made, which is a mute testimony to the adaptability of the American to adverse conditions.

Definition.—Rinderpest is a specific, malignant and highly contagious and infectious disease, characterized by a peculiar form of inflammation of the mucous membranes, more particularly of the digestive tract. It is spread by direct or indirect contact between sick and normal animals, the infection being carried only a limited distance through the air; birds, water streams, human attendants to sick animals, boats used for animal transportation, small animals, and even forage stored near affected animals and later fed to normal ones, all act as conveying agen-

cies. It is essentially a bovine malady, though it may be communicated to sheep, goats, deer, antelope, camel and other smaller animals. The period of incubation runs from three to ten days; by inoculation, two and a half to four days, varying owing to the virulency and quantity of the inoculating media; natural infection usually requires from four to seven days.

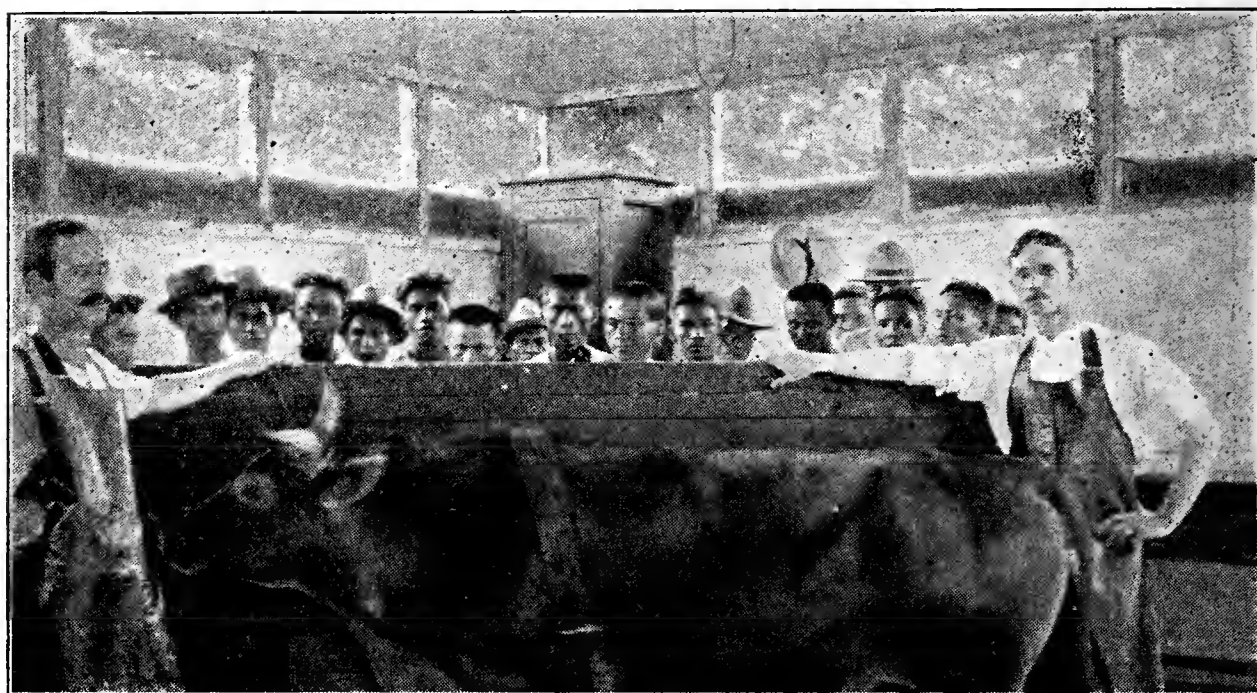
Symptoms.—There is at first a rise of temperature, which is above that brought on by labor, generally on the third or fourth day in the inoculation and the fifth or sixth day in natural infection cases. In 1865 Professor Sanderson proved that



No. 1. Flyproof operating room and force at San Lazero Hospital grounds for bleeding serum animals.

in this period the blood of the infected animal was capable of producing the disease if inoculated into a susceptible animal; this was later confirmed by Koch, but the latter thought such an animal was incapable of communicating the disease to a healthy one until the visible symptoms developed. The temperature rises to 40° or 41° centigrade, sometimes even 42° , and there may or may not be any accompanying congestion of the conjunctiva, but it follows in all cases in from a few to twenty-four hours; the congestion is extreme, causing the conjunctiva to have a tumefaction; later tearing is evident, running downward over

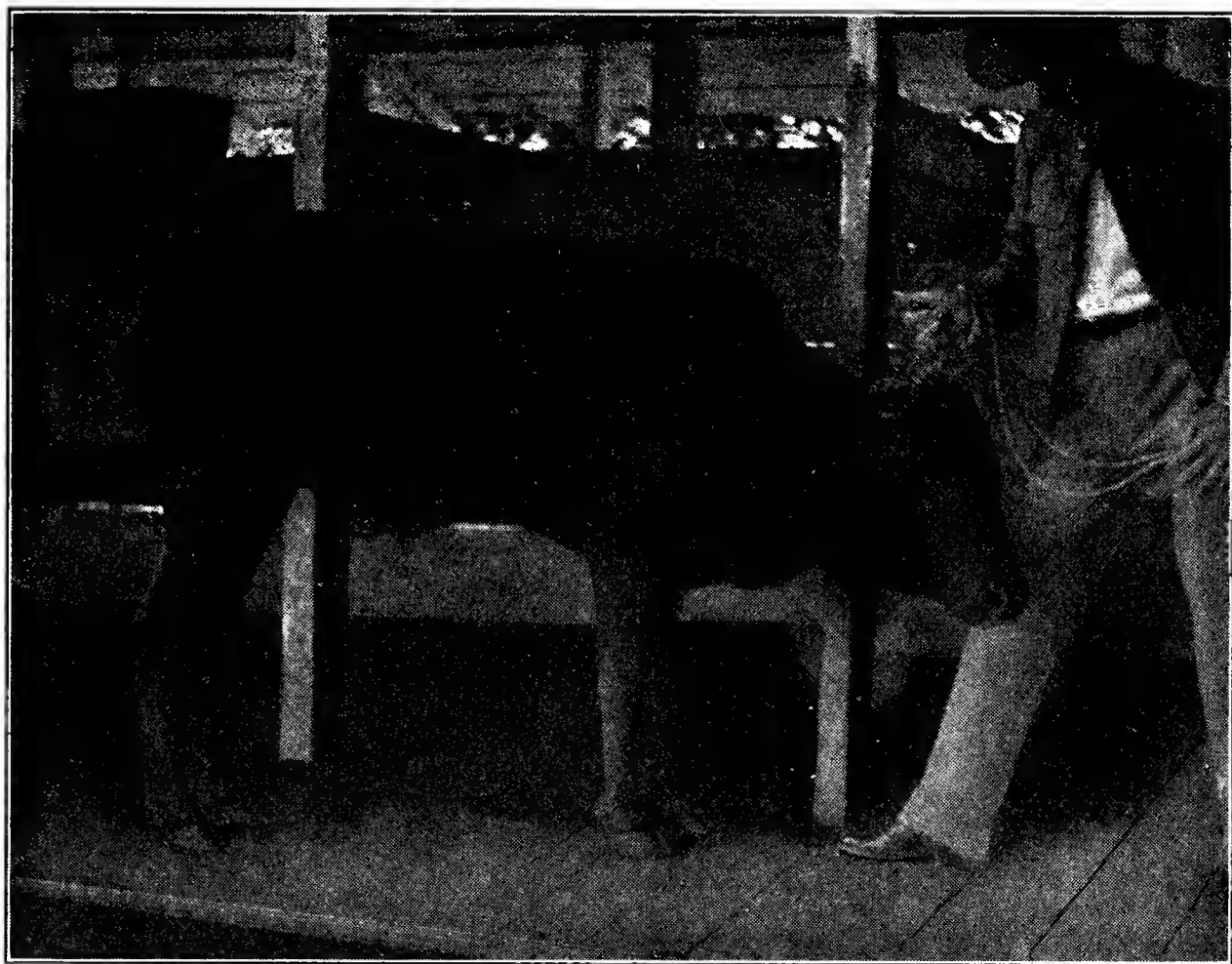
the cheek from the inner canthus; the coat is starring, appetite diminished or total inappetence, dullness increases; tearing may become more profuse; in some cases it has been noticed to diminish, but this is considered the exception; desquamation of epidermis, over which tears flow; about the fifth or sixth day ears droop, and while constipation is usually present at first, it becomes a watery purging about the sixth day; all visible mucous membranes are congested; vulva, nostrils, mouth and eyes; from the latter increased tearing mixed with mucous; saliva may dribble from mouth, while the diarrhoea becomes more intermixed



No. 2. Animal secured to operating table for bleeding purposes; sheared area over jugular vein indicates where animal was bled previously.

with mucus, later muco-sanguineous, giving off a peculiar and characteristic fetid odor; pregnant cows abort their young about the seventh or eighth day; the animal shows symptoms of much abdominal pain at each evacuation of the bowels and rumination is supplanted by a continuous grinding of the teeth; the skin becomes dry, and on the thinly hair-coated caraboo it resembles parchment to the touch, conveying heat to the hand, of the intense fever; exfoliation of the epidermis in region of the flanks is sometimes observed; twitching of the muscles and grinding of teeth, later accompanied with painful respiration. Discharges

from nostrils may contain blood and the palate has a peculiar salmon color; there has been seen mucous accumulation on the palate in form of nodules, but this was not a constant symptom observed by the writers, as only a few cases have been recorded with such lesions. The breath has an offensive odor; the color of the fæces is at first natural, later becoming a dirty brownish color; it is mixed with bile and mucus; evacuation of the bowels



No. 3. Rinderpest on seventh day, in which leg was so held as to make mucus discharge from nose more apparent; arched back, drooped ears and mucous accumulations at inner canthus and nose are typical.

is usually involuntary at first and thrown out with considerable force; later it is less in quantity and passes out, soiling the tail and hind legs; the animal is uneasy; loss of flesh is marked; thirst is great, and continuous desiring to sip water steadily; gait is staggering, causing pain at each step; left alone, the affected one will remain recumbent; breathing difficult and accompanied by low moan at each expiration; pulse is much accelerated,

along with high fever, and remains fast and more enfeebled until a few hours before death, when the temperature suddenly descends to below normal or to normal; body becomes cold; pulse almost imperceptible; breathing infrequent; animal in complete comatose state, usually with head thrown against right side, death coming on from eighth to tenth day, sometimes sooner. In milch cows the milk rapidly diminishes during the first stages. In many cases of apparent recovery the animal has been noted to suffer a relapse and die, probably due to the complication of either Texas fever or the surra parasite. While nearly all the Orient is immune to the former, it is the supposition that the attack of rinderpest has lowered the vitality and just at the subsiding of the latter. Texas fever is thus given ingress owing to the natural acquired resistance becoming lowered, and the same, in a measure, is true of surra.

Diagnosis.—This should not be so difficult, as one nearly always finds more than one sick animal, and possibly one that has just died, affording post-mortem advantages; but in the absence of this the elevation of temperature, tearing, the peculiar fetid diarrhoea, with offensive breath, drooping ears and the endemic nature of the disease; having had previous outbreaks, recent importation of animals from such places, mucus and blood in discharges and contagious nature.

Differential Diagnosis.—This is not always easy where other diseases of similar symptoms are known to exist, but, bearing the above cardinal points, no errors need be made.

1. *Malignant Catarrhal Fever.*—This disease is only slightly infectious, slower course and the lesions are confined to the respiratory organs and passages, with severe ocular disturbance; this latter symptom would be an excellent guide, taken with the history.

2. *Gastro-intestinal Catarrh.*—Cases are often met with which resemble rinderpest symptomatically, but the discharge from the eyes is more viscid than the latter and the absence of the peculiar fetid odor of the fæces, which is always present in rinderpest.

3. *Dysentery*.—In the affection the intestinal tract alone is involved, and while the diarrhoea is present the characteristic odor is absent.

4. *Anthrax*.—When in the gastric form may be confounded with rinderpest, but its course is more alarming; terminates sooner, as a rule; finding the bacillus would make it positive.

5. *Aphthous Fever* may present some symptoms similar to rinderpest; the presence of blebs on the lips, buccal mucous membrane and the coronet would aid the differentiation.

Pathological Anatomy.—The lesions of rinderpest are principally located on the mucous membranes of the digestive tract, the carcass is emaciated, buttocks and tail often soiled by fecal discharges, the cheeks below the inner canthus of the eyes are often excoriated, due to the irritating discharges from the ocular cavity. The changes of the mucous membranes of the mouth and œsophagus were not marked, save in the former, and then in a few instances some cases have been noted where the mucous linings of the rumen, reticulum and omasum were congested and slightly ulcerated; more common in the omasum than either of the former, but nearly all were normal. The contents of the omasum, while nearly all writers have claimed to have found some dry and hard, we found it fluid, with the exception of two or three cases, and in these semi-fluid consistency, this being noted in over one hundred post-mortem examinations held in various parts of the islands.

In the abomasum and intestines the most marked and characteristic changes are found. There is catarrhal inflammation of the mucous membrane, the submucous tissue is swollen and infiltrated with serum, the endothelium is detached in areas, varying in size from that of a pin point to a twenty-five-cent piece; especially is this true near the pyloric orifice; these areas are dark reddish-brown to black in color, the same graduating outward from a deep maroon at their border to a delicate carmine; the contents of the fourth stomach is serous and limited to quantity.

In the small intestines the congestion and inflammation is

of variable intensity, bearing a grayish to yellow muco-purulent exudate. In severe cases this presents a croupous exudate character, which often forms a complete cast of the affected portion. Peyer's patches and the other intestinal glands are particularly engorged; the contents consist of mucous exudates serum and small quantities of blood. In the large intestines the inflammation is less intense, but the cæcum is seriously involved, presenting a slaty appearance.

The liver is discolored, clayish in color and more or less friable; gall bladder distended, owing to obstruction of duct. The kidneys usually show a parenchymatous inflammation. The lungs have been found congested, also emphysematous, but we believe neither condition is characteristic. A fact worth mentioning is that the most severe cases ante-mortem showed very slight lesions on post-mortem examination, and the reverse was also true, hence it is supposed that in the former instance the time of sickness was too limited to admit of the pathological changes, and *vice versa*.

Treatment.—Medicinal treatment is not recommended, though there were times when anodynes and stimulants have served some small benefit.

For a period of six months or more intraveinuous injections of anti-rinderpest serum were resorted to in large doses, 200 to 6,000 c.c., and if given with the initial symptom of the disease it was followed with good results, and under such circumstances more than 50% could be saved, but in cases where the symptoms are well established, as they usually are in the field upon your arrival, the customary method was to inject 200 to 300 c.c. subcutaneously, followed in two days with 200 c.c. more, with possibly 50 on the third day, it being too expensive and impracticable to give one sick animal more than 400 to 500 c.c. of serum.

The following tabulated report of an outbreak of rinderpest in the Province of Bohol gives some idea of the prophylactic and curative value of serum, remembering that in case of animals considered exposed or liable to become so 50 c.c. was given

subcutaneously, while the sick animals received 100 c.c. the first, second and third days, with 50 c.c. on the fourth, or more in individual cases :

	No. Inoculated.	No. Sick.	Deaths.
Week ending July 7.....	36	59	17
Week ending July 14.....	37	36	23
Week ending July 21.....	696	23	12
Week ending July 28.....	1,328	20	15
Week ending August 4.....	357	17	12
Week ending August 11.....	357	13	5
Total.....	2,811	168	84

In this case getting men and facilities into the field consumed most of the time, but the third week the real work began. Almost immediately the animals that were exposed, having had serum given them, the number of sick began to grow less and those that were sick and having had sufficient serum and time for same to become active they began to convalesce.

There are three methods of giving immunity against rinderpest, viz., the bile method, defibrinated blood method and the serum-simultaneous method.

1. *The Bile Method* (Eddington) consists in destroying an animal affected with or one that has just died from the disease, removing the gall bladder by ligating the neck of same, then separating it from the liver beyond the ligature, submerging the whole in a 5% carbolic solution, then emptying the bile in a retainer under aseptic precautions, adding one quart of glycerin to each two parts of bile, allowing same to stand for eight days, when it is ready for use. The glycerin destroys other agents in the bile, but does not injure the immunizing powers, rendering the same incapable of communicating the disease. The dose is 20 to 50 c.c., according to size of animal to be inoculated. Advantages of this method are: It is easily prepared and does not require special skill, renders temporary immunity to the exposed until the epizootic subsides and, given in large doses to affected animals, lessens the attack and may allow patient to recover. Disadvantages are: That it is expensive; owing to the small amount of bile secured, it is necessary to sacrifice a number of animals, some of which might recover; the immunity thus given

is only temporary, and will be of little value in warding off an attack of the disease six or eight months later; also the delay of eight days may cause considerable loss, allowing the malady to develop in all exposed animals.

2. *The Defibrinated Blood Method* consists in taking blood from an animal that has just recovered from the disease, defibrinating it all with proper aseptic precautions and injecting 50 c.c. subcutaneously, or in some instances more.

This has the advantage in that it can be carried on immediately and renders the animal so treated passively immune; thus it may retard more members of the herd from becoming sick; also there is no reaction to lower the vitality of the animal and allow other troubles to develop.

The main disadvantages are that in the subjects immunity is only temporary, (one to three months) and the danger of injecting into the system other infections, thus doing a harm instead of a benefit.

3. *The Serum-Simultaneous Method*, with a slight modification, was the one used at the serum laboratory and also in some provinces of the islands; it consists in inoculating the individual with 50 c.c. of serum and 1 c.c. of virulent blood on either side of the neck or shoulder; in practice this method was modified to allow the virulent blood to be inoculated ten days after the serum, thus giving the system time to take up the serum and the immunity to become effective to some extent, as we had no adequate method of determining the possibility of the animal having been infected naturally, in which case, by the simultaneous method, the additional amount of virus would only hasten the onset of the disease before the serum could become effective, thus causing a higher mortality than we should have. In typical reactions the temperature should rise to 40° or 41° C. on third or fourth day following the virulent blood inoculation, and should remain above 40° C. for at least three days. When it returns to normal gradually, and although the only visible symptoms may be the congestion of the conjunctiva and some tearing, more severe symptoms are common, varying with individuals and their susceptibility.

The advantages of this method are lasting immunity—supposed to continue through life—and that serum can be prepared and stored for several months, and one set of inoculations is all that is necessary. In case the reaction does not develop, the animal is rendered temporarily immune for several months and, having the animals under daily or bi-daily temperature chart, additional virulent blood can be given ten days later than the former, and thus bring on a reaction.

The disadvantages are that from 1% to 10% die from this method. It is impossible to regulate the amount of virus in relation to amount of serum to be given to animals in the same herd and the various degrees of susceptibility in different localities; also the greater skill is required, and it is expensive owing to the necessity of keeping trained assistants over each herd for at least ten or twelve days.

The additional danger with all inoculations where blood is used in countries infected with surra, as the Philippines are, is that of transmitting the *Trypanosoma Evansi* to the herd being inoculated through the medium of the virulent blood, the same having been obtained from another animal in possible distant regions from the herd receiving the inoculation inhabits, and as the above trypanosoma lurks in the plethoric caraboo for years without seeming harm to him and that repeated daily microscopic examinations of his blood is necessary to determine its presence, it is readily seen that one cannot be absolutely sure that he is securing virulent rinderpest blood that is not also carrying in it the trypanosoma which, administered to another herd under their lower vitality caused by serum inoculations and confinement, may develop so strong as to cause additional losses and a continued enfeebled state of many so inoculated, should they recover.

Another point we desire to make is that serum prepared from one specie should be used in that specie, as it has been proven that the immunizing agent produced in one specie is not so quickly or completely utilized in another specie, especially when administered to him, as is often the case, in his enfeebled state.

ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

BY D. E. SALMÓN, D.V.M., MONTEVIDEO, URUGUAY, S. A.

(Continued from May issue.)

4. *Are similar lesions produced by the artificial application of arsenic to the horse's nostril?*—Similar, and, according to the writer, identical, lesions were produced experimentally in horses which were stabled and protected from the influences which caused the ordinary ulcers. However, it must not be supposed that a mere dab of arsenic on the mucous membrane of a horse's nose will cause the formation of an ulcer; for the process is neither so rapid nor so simple as to be developed in that manner.

It has seemed to the writer that the local irritating and corroding effect of arsenic when applied to the intact skin or mucous membrane is much less active than is generally believed. For example, Peterson and Haines say:(4)

“In the vast majority of cases the local action of arsenic is pronounced. It does not corrode dead and living tissue alike, as would the corrosive acids and alkalies. Vital irritability is required, or the effect on organic matter will be relatively small. Applied to a part, it irritates so profoundly that the phenomena of inflammation appear at once and make rapid progress to the latest stage of local death. It blisters the skin like a burn, and the mucous surfaces respond with equal promptness to its corroding touch.”

Now, while arsenic will do all of this, there is an element of time required which might not be suspected from reading this paragraph; and this is precisely because arsenic is *not* a corrosive poison like the alkalies and mineral acids. That is, it must enter the cells and exert its action on the living protoplasm, and this action is made apparent, if the quantity of arsenic absorbed is

sufficient, by the degeneration and necrosis of the protoplasm. While the final result may be practically the same, it is clear that this is a much slower process than the sudden corrosion of the tissues by a caustic. It is not only slower after the penetration of the arsenic, but the arsenic must be applied longer to secure its penetration. The writer's first experiments failed on account of a lack of appreciation of this fact, and the experts for the defense were, according to their evidence, more or less astonished that their applications of arsenic to the Schneiderian membrane of the horse failed to produce the anticipated caustic effect.

The writer's earliest experiments were made by blowing arsenical powders into the horses' nostrils, the effort being to imitate as closely as possible the conditions of the natural application of smoke dust. These experiments failed, because these powders immediately excited a secretion of thin mucus and caused the animals to blow and snort, so that, in a few seconds, the material which was applied had been completely expelled. It was impracticable to continue these applications a sufficient time to obtain positive results. The first application of arsenic paste failed for the same reason.

To give a more definite idea of the action of arsenic when applied to the intact skin and mucous membrane, the notes of a successful experiment will be transcribed with some detail:

“October 3. An arsenical paste, made by moistening white arsenic with water, was applied to the nostril of a horse at the point where the natural ulcers were usually seen. The animal was carefully held for twenty minutes to prevent the dislodgement of the paste. When freed, he rubbed his nose, snorted and got rid of the paste as soon as possible, indicating that it had produced an unpleasant sensation. This horse was fed during the experiment on hay produced outside of the smoke zone.

“October 4. No visible effect from the application of the arsenical paste. Application renewed in the same manner as before.

“October 5. There is evident irritation where the arsenic was applied. Application repeated.

"October 6. There is irritation and thickening of the mucous membrane. Application repeated.

"October 8. Inflammation increased. Application renewed.

"October 9. There is now a small sore at the point where the arsenic was applied. Application repeated.

"October 10. The sore in the nostril is about half an inch in diameter and appears like a superficial erosion. Application repeated.

"October 12. The sore is somewhat larger; still superficial. Application repeated.

"October 13. There are now two ulcers in the nostril becoming confluent; also, a fissure extending along the floor of the nostril and following the course taken by the slight flow of nasal secretion. A careful comparison of these lesions with ulcers developing naturally, in the nostrils of horses at pasture on the same ranch, indicates that their appearance is identical in every respect. Application repeated.

"October 14. Application repeated.

"October 15. The ulcer is now $1\frac{1}{2}$ inches long by 1 inch in breadth. It is covered with thick, black crusts and is just sufficiently moist on the surface for the dust from the hay to adhere and form these crusts, but there is little if any suppuration. There is still a fissure below the ulcer.

"The lesion resembles the naturally formed ulcers of three other horses on pasture on this ranch, and, after close comparison and study, it was concluded that their appearance was identical in every respect, even to the fissures below the ulcers. As the ulcer was so well marked and characteristic, no further applications of the arsenical paste were made.

"November 2. The ulcer is still about $1\frac{1}{2}$ inches in diameter, with the crusts becoming loose around the border. The animal was killed and the nose taken to Butte, where it was entered as an exhibit at the hearing."

The ulceration, in this case, began within a week from the first application of the arsenic, and a large, deep ulcer was developed within two weeks. This was also about the rate of devel-

opment of the natural ulcers at pasture. However, in the production of the artificial ulcer the arsenic was applied for only twenty minutes at a time on ten different days, while, in the production of the natural ulcers, the application was doubtless for 12 to 15 hours a day for every day while at pasture after the smoke dust had been deposited on the grass. The more constant application of the smoke dust, therefore, was sufficient to counterbalance its lower content in arsenic.

5. *Have similar lesions been observed in man when breathing dust containing arsenic?*—In the quotations already made from Harkins and Swain, it has been shown that one of the persons who worked on the smelter stack, in determining the arsenic content of the smoke, had his nostrils almost closed by the inflammation which resulted from inhaling the smoke dust, while the irritating effect of the dust from grain in the smoke zone was such that it seriously affected both the eyes and nasal passages of the threshers.

Some previous observations of this class of lesions are reviewed by G. Brouardel, who says:(5)

“The nasal lesions caused by the direct application of arsenic transported by the fingers, or by the contact of arsenical dust, are quite frequent. Hillairet, according to Rollet, was the first to describe these lesions and to show that they might even perforate the nasal septum.

“According to Delpèuch, there is, at first, inflammation and swelling of the mucous membrane; the projecting parts of the external wall of the nasal fossæ fill the space which separates them from the septum and become adherent. In this way occurs occlusion of one or both nasal fossæ, the nostrils being transformed into culs-de-sac. It is the arsenical dust accumulated in these culs-de-sac which causes the ulcerations, and, according to Rollet, these occur with the workmen above all on the external wall and on the septum. On the external wall two points are especially attacked because they project: the anterior extremity of the inferior turbinated bone and the projection formed by the external branch of the cartilage of the wing of the nose; this

projection corresponds to the depression which constitutes the grove of the wing of the nose.

“By dilating the nostrils, the ulcerations may be seen with their grayish and bloody surface; sometimes there is perforation of the cartilage. Delpech's patient had a perforation 1.5 c.m. in width and 2 c.m. in length above the inferior border of the lower septum; this perforation extended to the perpendicular plate of the ethmoid. Another case cited by Rollet had an oval perforation with a long antero-posterior diameter of 10 to 15 millimeters, seated above the lower septum and on the anterior part of the median cartilage.”

Dr. Thomas M. Legge, Medical Inspector of Factories, Home Office, in his evidence before the Royal Commission on Arsenical Poisoning, said, in substance:(6)

In the manufacture of arsenical sheep dips, a peculiar condition of erosion of the septum of the nose is brought about. The perforation is similar to that found very commonly among men working in factories where bichromate of potash is packed. The perforations cause permanent destruction of the part, but it is limited. It does not involve the whole of the septum of the nose, so that there is not much disfiguration in the cases where it has occurred.

In his written statement submitted to the Commission, Dr. Legge said:(7)

“*The manufacturers of sheep dip.*—The manufacture is carried on in about ten factories and workshops, of which I have recently visited four. I append the results of the superficial examination of 18 men employed in the largest of them. Perforation of the septum of the nose had not been mentioned to me, in any of the factories visited, as one of the effects of the employment. On the condition of No. 12 being noted, I was informed that they were the symptoms which would be presented by nine out of ten persons on commencing work. None of the men examined confessed to injury to health from their employment. Sheep dip is an arsenite of soda containing arsenic sulphate and free arsenious acid. The process of packing gives rise to considerable dust. * * *

“The morbid process is ushered in by sneezing, and the ordinary symptoms of nasal catarrh. Pain accompanying it appears to be very slight, and it is certain that many of the men were unaware of the perforation.”

Dr. Legge's detailed statement shows that 7 of the 18 workmen referred to had perforation of the septum. In one the perforation was $\frac{1}{4}$ by $\frac{3}{4}$ inch in size; in another $\frac{1}{4}$ by $\frac{1}{2}$ inch, and in a third $\frac{1}{4}$ by $\frac{1}{4}$ inch. The dimensions in the other cases were not given.

Dr. Stevenson said with regard to the local effects of arsenic: (8)

“I have seen numbers of men in tanneries who were affected, that is to say, they got their cheeks affected, and their eyes, their lips and their genitals, from handling them with unclean hands when urinating, and they got troublesome sores. * * * I saw a man once who had his cheek perforated by such a sore.”

These various observations serve to give a very clear idea of the local effects of arsenic, of its activity in causing ulcerations, and of its great tendency to cause sores, ulcers and perforations in the nostrils of the workmen who are employed in factories where there is much arsenical dust.

6. *Was there sufficient arsenic in the crusts and tissues of the Deer Lodge Valley ulcers to indicate that these lesions were due to arsenic?*—Notwithstanding all the evidence which has been presented indicating that the nasal ulcers of the horses in the Deer Lodge Valley were due to the irritating effects of the arsenic contained in the smoke dust, it seemed important that actual analyses should be made of the crusts and tissues of the ulcers in order to prove the presence or absence of arsenic in the lesions. If it were present even in small quantities, it would be a strong confirmation of the theory that the ulcers were produced by this poison. Accordingly, samples were taken from a number of horses; some consisted of the thick crusts alone, which were removed from living horses; others of the crusts and floor of the ulcers, which were removed at the time autopsies were made. These samples were analyzed by Harkins and Swain with the following results: (9)

No. of Sample.	Distance from		Parts As ₂ O ₃ Per Million.
	Smelter,	Miles.	
1	2	S.	254
2	4.5	N.N.E.	587
3	3	S.E.	1,015
4	2	S.	902
5	3	S.W.	545

These analyses give an average, with five samples, of 660 parts of arsenious acid per million, an enormous quantity, which was far beyond any anticipations that were harbored by the writer before the analyses were made. It may, therefore, be admitted that all of these lines of evidence are in harmony with the theory that the ulcers are caused by the direct action of arsenic at the point where the lesion appears, while the presence of so much arsenic in the crusts and tissues of the ulcers, considered in connection with the other lines of evidence, must be accepted as direct and convincing proof that this is the cause.

7. *Why are not similar lesions observed in other species of animals?*--This is a question that was often asked by persons opposed to the arsenical theory, and, while it is by no means necessary that it should be answered in order to establish that theory, it is, nevertheless, desirable that it should receive some attention. Comparing equine and bovine animals, it must be admitted by all that the horse bites closer to the ground than the steer or cow, and this fact, together with the use of the mobile upper lip, makes it probable that more dust is raised and drawn into the nostrils by the horse when eating grass at pasture than by bovine animals. Secondly, the skin and mucous membrane at the entrance to the nasal chambers of the horse are much thinner, softer and more sensitive than those of the cow, and, no doubt, would be affected much more easily; besides, the tissues of the horse are, in general, more easily irritated and inflamed than are those of the cow. Thirdly, the bovine animal has an

inestimable advantage in being able to protect itself from the prolonged action of an irritant, at the point corresponding to that where the ulcer develops in the horse, by easily inserting its tongue into the nostril and removing the irritating material. It is to these peculiarities of bovine animals that the writer attributes their exemption from the nasal ulcerations.

The sheep, which resembles more nearly the horse in its manner of biting the grass, and in the sensitiveness of the skin and mucous membrane of the nose, is not exempt from the ulcerations, though from their smaller size in this animal the ulcers are not so conspicuous. Dr. Formad, who made an investigation on behalf of the U. S. Bureau of Animal Industry, has given a very conclusive illustration, from a photograph, of such an ulcer in a sheep's nostril, and states that out of a flock of 60, pastured about ten miles north of the smelter, 10 were examined, and 3 of these had nasal ulcers.(10)

The writer, also, saw these ulcers in sheep and made a record of the examination of 4 of these animals on the Para ranch, December 5, 1906, of which 3 had ulcers in their nostrils very similar to those of horses, and these were covered by soft black crusts. Horses, therefore, are not the only animals which suffer from the "sore noses," and the fact that cattle do not exhibit such lesions cannot be accepted as valid evidence against the arsenical theory.

To recapitulate:

The "sore noses" or nasal ulcerations of the horses of the Deer Lodge Valley do not appear in the summer or fall until two or three weeks, or longer, after the smoke has been over the valley.

They are not inoculable.

They begin to heal at once if the horses are removed from the pastures and fed on arsenic-free hay.

They are not transmitted by cohabitation.

Similar "sore noses" have been observed in horses around other copper smelters.

The nasal mucous membrane of horses at pasture, at the time

the ulcers are beginning to appear, is coated with smoke dust rich in arsenic.

Similar lesions may be produced by the artificial application of arsenic.

The breathing of arsenical dust is a frequent and recognized cause of ulceration of the nostrils and perforation of the septum in the men who work in factories where such dust is generated.

There is a tremendous quantity of arsenic in the crusts and tissues of the naturally developed ulcers.

Similar ulcers, also, develop in the nostrils of sheep which are feeding on the same pastures.

These facts lead irresistibly to the conclusion that the ulcers are caused by arsenic; that their beginning in the summer or fall is dependent upon the direction of the wind currents and the deposit of smoke dust on the pasture grass; that their disappearance in the late winter or spring is due partly to feeding upon hay, partly to the dust being removed from the grass by the storms of winter and spring, and partly to the currents of air carrying the smoke away from the valley at that time of the year.

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10. Formad, Robert J., V.M.D., M.D.: The Effect of Smelter Fumes upon the Live Stock Industry in the Northwest. Twenty-fifth Annual Report of the Bureau of Animal Industry, Washington, 1908, p. 253.

CORRECTIONS.—In Dr. Whitehouse's article on page 216, May issue, the word variety should read *rarity*, salt should read *salts* on page 217, and rumen should read *lumen* on page 218.

THE OLD FRANK WORTH TROTting HORSE STABLE FILLED WITH SADDLE HORSES.—The elegant stable, substantially built years ago, in West Fifty-sixth street, New York, by Mr. Frank Work as a home for his trotters, has been leased by several Wall street men, and is being used by them as a sort of private club-stable for their saddle horses, numbering among them some of the best in the country.

THE RELATION OF THE LABORATORIAN TO THE PRACTITIONER.

BY LEROY F. THOMPSON, D.V.S., FORT WORTH, TEX.

Continued from May Issue.

In 1880 Evann described the trypanosome of surra and succeeded in transmitting the disease by inoculation experiments. Following closely upon this discovery was the discovery of the cause of malaria by Laveran in 1882, and the causative factor was given the name of *Plasmodium malariae*.

Progress was delayed in the study of minute objects like bacteria because of lack of proper methods for their isolation, identification and observation. Koch and Pasteur were, it is said, to be the first to use, successfully, culture media wherein pathogenic micro-organisms could be grown. To Koch we are also indebted for our knowledge of the solid media which is used for the isolation of organisms from mixed cultures, thereby relieving the practitioner of doubt as to the real specific cause of a given disease. This contribution and its importance can hardly be overestimated, for the use of pure cultures lies at the very foundation of all modern bacteriologic laboratory investigation. To this discovery is due in a large measure the rapid advance made during the two decades in the identification of the organisms producing disease.

To Weigert we owe the honor and credit for being the first man to use the aniline dyes in rendering cells and their structures more plainly visible under the microscope, but to Koch, again, we owe the credit for their application in bacteriology. Since their introduction successive adventures in staining technique have in every instance been followed by the discovery of new organisms related to disease, therefore the microscope, perfect technique, liquefiable media and aniline dyes represent the

most important factors to the laboratory man in the development of the science of bacteriology.

In 1875 the credit is due Lister for using the first antiseptic precautions, though crudely, but which opened up the field for progressive and scientific surgery.

The influence maintained by the laboratorian to-day in the development of veterinary medicine really began with Virchow, who nearly a century ago established the cellular theory from which has developed cellular physiology and the detail of cellular action of various drugs. So the theory of ancient history known as the humor theory, which was the belief at that time—that the body was made in the form of a sack or bottle and contained but three fluids or humors—was successfully explained by this remarkable discovery.

Secondly, I will endeavor to bring out only a few points in immunity to further show the need for closer relationship between the practitioner and laboratorian. Further, to show the practitioner just how much he is indebted to the laboratorian for his zealous work in this branch of knowledge and science in the successful treatment and eradication of disease.

Immunity is a term used to express relative resistance to disease. It is defined by Ricketts as follows: "By immunity we understand that condition in which an individual or species of animal exhibits unusual or complete resistance to an infection for which other individuals or other species show a greater or lesser degree of susceptibility." It is but natural, then, for the converse of immunity to be susceptibility or lack of resistance. It is therefore easily noted the broadness of this subject and hence the need for me to deal with it as briefly as possible in order that a part of it may be incorporated within the scope of this paper.

There is a great deal of credit due to the laboratorian for his contribution to the medical world of the various biologic products which are of so great a value to the profession and the world at large in the prevention and treatment of disease. The time has come when prophylactic science in the eradication of disease is

of the utmost importance and is so recognized by all progressive and scientific medical men. Which condition was only brought about by constant labor, combined with patience and devotion by the experimental laboratorian.

The time is not far distant in my opinion when we will have at our command for use a specific biologic product for each infectious disease. We also have the various theories of immunity at our command to further our education into the intricate depths of medical science, and the proper understanding of them would result, I believe, in more intelligent treatment and eradication of disease. Which conditions were brought about by these same men of science who toil away their energy and life in a laboratory.

To mention a few, I will call your attention to the humoral theory of Ehrlich and his noted lateral chain theory, along with his toxin, antibodies and chemic therapy beliefs, that have proven to be of so great a value to the world. The theory of phagocytosis, by Metchnikoff. Wassermann's test has been of great importance to science and is being used as an accurate aid to diagnosis. Also that of anaphylaxis, as stated by Anderson and Frost, is a step toward immunity, which is considered as an increased capacity for safely and rapidly eliminating the specific antigen proteid.

There is being manufactured and used daily in this country many products as the result of these important discoveries; for illustration, the many serums, bacterins, vaccines, antitoxins and chemio-therapeutic agents used in the prevention and care of various infectious diseases; some of the more important are rabies, influenza, anthrax, typhoid, Texas fever, hog cholera, pneumonia, tetanus, blackleg, cerebro-spinal meningitis, sausage poisoning, diphtheria, and canine distemper. In addition to the foregoing products there is a great use and demand for biologic products for testing animals for infectious diseases, and brought about wholly as the sequence of such laboratory work.

To call your attention to the importance of these discoveries, I will name a few diseases and enumerate some points and facts

relative to them which were brought about by laboratory tests and experiments.

Rabies is one that is very important to us all, so it will be the first on the list.

To Negri, the Italian scientist, we owe the credit of first demonstrating a successful lesion, whereby we could more definitely diagnose this malady, and in consequence the test has been named for him and is known as the Negri body test. The Negri bodies exist in an affected animal within the *Hippocampus cerebri* and are readily discernible as minute red areas to the experienced laboratorian. By this test there has been removed many chances for making an erroneous diagnosis on the part of the practitioner, thereby giving him the advantage of imparting intelligent advice to his patron early in the case, and in that way it would be the means of preventing many serious complications. There are many cases of hydrophobia that can be diagnosed by no other test, or by any symptoms presented by the patient.

At the Kansas City Veterinary College Laboratory there has been presented for diagnosis 161 cases between the 1st day of January, 1910, and the 1st day of February, 1912, and which resulted in a positive diagnosis of 127 cases, or 79.2 per cent. The mortality has been decreased greatly by the use of the Pasteur method of treatment.

To digress somewhat, I will mention here that it is of primary importance that when one is bitten by a suspicious canine, it will facilitate diagnosis greatly by killing the dog and remove its head and pack it in ice and send it to a laboratory at once. I will also mention the fact that most laboratories are in a position to supply home treatment, this consisting of mailing the vaccine to the attending physician daily, which he injects in the patient, thereby eliminating the necessity of going to a hospital as well as saving time and expense.

Tuberculosis is one of the greatest maladies that we have ever had to combat, but, nevertheless, the laboratory is making great inroads on its effectiveness by giving to the world the cause and many prophylactic measures for its use and suppression of this much-dreaded disease.

The tests now used for this disease are known as the subcutaneous, ophthalmic and intradermal tuberculin. Through the use of them there has been carried on a great work in the eradication of tuberculosis.

Glanders is another important disease and is worthy of the efforts of both the laboratorian and practitioner.

The various tests given the profession by the laboratory I will merely name, as there is too much to them to go into detail in this paper. The following are recognized by the profession at this time: Auto-inoculation; extirpation of submaxillary gland and examination for *Bacterium mallei*; Strauss' method of guinea pig inoculation; mallein; subcutaneous, ophthalmic and cutaneous test; serum agglutination; precipitation; Konew's modified precipitation; complement fixation; potato test culture, and lastly, the combined complement fixation and agglutination tests for which the Bureau of Animal Industry showed the greatest preference in their last report.

In dealing with the parasitic infestations the practitioner very frequently is confronted with cases that would baffle him entirely, if it were not for his laboratory training and he did not resort to that means for reaching an intelligent diagnosis.

Tumors are another source of grief to the untrained practitioner, in that he cannot, with any degree of positiveness, differentiate between malignant and benign growths without the aid of the laboratory technique, methods, microscope and laboratory science.

Without the assistance of the laboratory the practitioner would be at a loss to properly diagnose or differentiate between various poisons as met with in his practice.

Milk and its products as handled and distributed is a very easy medium to adulterate and contaminate, thereby requiring the scientific inspection of competent laboratory men to discover it. So therefore it is of the utmost importance that nothing but conscientious, honest and progressive laboratorians be employed to safeguard the public health and their welfare, through this, one of the most important food products.

With the knowledge of laboratory science and methods, an experienced laboratorian is capable of detecting any adulteration, the quality of the product, amount of the various ingredients and the number of bacteria to the cubic centimeter.

The microscope is also invaluable to the breeder of fine animals, as it gives him the means whereby he can detect sterility very readily where otherwise it would be impossible for him to ascertain the cause; as there is quite frequently met with males that ejaculate properly, but on microscopic examination the spermatozoa is found to be dead.

Urine analysis is another great aid to the practitioner and can be carried on only through having an intimate knowledge of laboratory work.

Last but not least is the great amount of knowledge that has been given the practitioner through the discovery by the laboratorian of that important branch of medicine, namely, hematology. Through this discovery there has been many conditions and diseases, with their cause, brought to light, so they can be met with, combated and treated with some degree of intelligence. The various tests for hemoglobin, and the knowledge of blood corpuscles and the number of their variety, has rent the veil of mystery that has inshrouded blood diseases for so many centuries.

The knowledge of the blood count with the variety of the leucocytes in certain specific conditions has rendered diagnosis more positive by the aid of the new laboratory equipment. The same may be said of the rapid advance in bacteriology since the discovery of a method for isolating, cultivating and counting of bacteria.

It is with pleasure that I note the addition of the laboratories in our educational institutions, and hope that they will continue to improve along that line, as men with such advantages will readily see the importance of the laboratorian to the practitioner.

* * *

Following the discussion of this paper, and as a result of questions put to the author, he stated that he was of the opinion

that it depended entirely upon circumstances as to whether or not a practitioner should be his own laboratorian. If there was a competent laboratorian near at hand, it was his belief that the practitioner should consult him; if such was not the case, and the practitioner had the means, it would be in order for him to fit out a small laboratory. Further, it was his opinion that the day had arrived for specialization in veterinary medicine, as in other branches of human endeavor and science.

It was also his belief that it is impossible for the average man in veterinary medicine to be both an expert in laboratory work and a successful practitioner.

DR. SAMUEL E. BRUNER, of Greensburg, Pa., has been appointed veterinary inspector on Live Stock Sanitary Board. Dr. P. K. Jones has been promoted to charge of Union Live Stock Yards, Pittsburgh, Pa.

TROTTHING IN 1912.

(MEETINGS ON MILE TRACKS).

Grand Rapids, Mich., July 8-12.

Kalamazoo, Mich., July 15-19.

Detroit, Mich., July 22-26.

Pleasanton, Cal., July 24-29.

Cleveland, Ohio, July 29-Aug. 2.

Pittsburg, Pa., Aug. 5-9.

Decatur, Ill., Aug. 6-9.

Buffalo, N. Y., Aug. 13-16.

Peoria, Ill., Aug. 13-16.

Galesburg, Ill., Aug. 20-23.

Salem, N. H., Aug. 21-23.

Boston, Mass., Aug. 26-31.

Portland, Ore., Aug. 26-31.

Hartford, Conn., Sept. 2-6.

Minneapolis, Minn., Sept. 2-6.

Syracuse, N. Y., Sept. 9-13.

Louisville, Ky., Sept. 9-14.

Fort Wayne, Ind., Sept. 10-14.

Milwaukee, Wis., Sept. 10-14.

Sacramento, Cal., Sept. 14-21.

Detroit, Mich., Sept. 16-21.

Dubuque, Iowa, Sept. 16-20.

Nashville, Tenn., Sept. 16-21.

Columbus, Ohio, Sept. 23-Oct. 5.

Stockton, Cal., Sept. 23-28.

St. Louis, Mo., Sept. 24-28.

Sedalia, Mo., Oct. 1-5.

Fresno, Cal., Oct. 1-5.

Birmingham, Ala., Oct. 3-12.

Springfield, Ill., Oct. 7-11.

Richmond, Va., Oct. 7-12.

Lexington, Ky., Oct. 8-19.

Dallas, Tex., Oct. 12-23.

Los Angeles, Cal., Oct. 16-19.

Phoenix, Ariz., Nov. 4-9.

THE INTRADERMAL TUBERCULIN TEST.*

BY D. F. LUCKEY, D.V.S., BLOOMFIELD, MO.

The old subcutaneous test is so unsatisfactory in so many different ways as to give due cause for rejoicing at the discovery of a simpler test, and one that promises to be if anything more accurate. In extreme cold weather the night and early morning work required in taking temperatures of cattle is disagreeable in the extreme. In hot weather, when cattle are accustomed to the comfortable conditions of the shady blue-grass pasture, it is almost inhumane to confine them for 24 hours in a hot dairy barn. Very frequently, indeed, an animal will be found which is in no condition to give a true reaction to the temperature test. It is no uncommon thing to have to postpone a test on a cow that is found in heat, one in advanced pregnancy, or one which has recently brought a calf. Various other agencies, too numerous to mention, interfere with the temperature and the length of time required to give the temperature test makes it impractical to use this test in examining small lots of cattle scattered through the country. This fact has become extremely apparent to us in attempting to test all of the cattle furnishing dairy products to a city in this state.

The intradermal test has many advantages over the temperature test. No night work is necessary. Neither age, nor the condition of the animal cuts much figure, if any at all, with the reaction from the intradermal test. A cow that is in heat, one that is in advanced pregnancy, one that has recently brought a calf or aborted, young or wild animals that are excited or worried may be tested with the intradermal test, as well as the old gentle cow that stands quietly in her stall. The intradermal test is so many times more expedient, as to make comparison

* Presented at Semi-Annual Meeting of the Missouri Valley Veterinary Medical Association, Kansas City, January 1912.

almost unnecessary. Without it we would have been entirely unable at any reasonable expense to make the tests of the small scattered herds furnishing dairy products, for instance, to the city of Columbia. With the use of the intradermal test we have tested over 700 lots of cattle for this city, many of which contained one, two or three animals. Except for the intradermal test coming to our rescue, we should have been compelled to abandon our plans for the eradication of tuberculosis in the State of Missouri.

For several years we have wished, and almost prayed, for some more satisfactory and expedient method of testing cattle for tuberculosis than the old temperature test. We have diligently tried out every test that has been mentioned in veterinary literature. As soon as what is known as the "eye test" was announced we gave it a thorough trial, and found it inaccurate. About the same time we tried out the method of scratching the skin, and inoculating the scratch with tuberculin, or what was known as the "skin test." This also fell far short of accuracy. It only took a few trials to discover that both of these were unreliable.

Naturally, when the intradermal test was announced, we longed for it to be a success, but were very skeptical about it. We, therefore, began its use with extreme caution. We had so little faith in it that we never thought of using it at all, except to compare to the temperature test before any animal was condemned. Results were surprisingly satisfactory from the beginning. We looked for a chance to give it a severe trial. For this purpose we selected an old herd which we reasonably expected to be badly diseased with tuberculosis. Fifty-nine of the old animals in the herd were given the intradermal test. One reaction resulted. We were about ready to discard this test without further trial, but we followed up in a few days with the subcutaneous test, and, strange to say, got a slight temperature reaction in the same animal and no others. The reaction from the intradermal test was more marked than that from the temperature test, the latter giving what is ordinarily considered a

“suspicious” reaction. The cow was old and practically worthless and so therefore condemned on the suspicious reaction to the temperature test. Our doubt about the accuracy of both reactions was increased for the reason that this cow had been in the herd for a number of years and none of the other animals had become affected, which is directly contrary to the general rule. She soon went to slaughter and showed a tuberculous lesion of the liver, thereby strengthening our faith in the intradermal test and explaining why the other cattle in the herd had not become affected. We then began the use of the intradermal test in small lots of cattle scattered out through the country around Independence, but never with the thought of condemning an animal showing a reaction to it until the temperature test had been applied. We soon found that the verification of the intradermal test with the temperature test was superfluous and unnecessary, but for the sake of trying the matter out thoroughly we continued to carry the temperature test along with the intradermal test in diseased herds after we began testing cattle in the vicinity of Columbia. However, we soon discovered the tuberculous centers in the vicinity of Columbia. We ventured to rely upon negative results from the intradermal test in all cattle with a good history. Before finishing the work around Columbia, however, we abandoned the temperature test and used the intradermal test altogether. We left the tuberculin testing off about July 1, and our whole force went on to tick eradication. When we took up tuberculin testing again last fall we did so with the intention of using nothing but the intradermal test. Several lots of cattle around Springfield, Pleasant Hill and St. Joseph were tested up to December 31, in all 3,458 head. Forty-four herds were found to contain one or more reacting animals. One hundred and thirty-eight head of cattle were condemned. One hundred and three of these condemned cattle have, to this writing, been slaughtered and lesions of tuberculosis visible to the naked eye found in all but two. Considering the condemned animals alone, the intradermal test has apparently made two errors out of 103 post mortems. At this

ratio, there is a probability of less than one error in the 35 reacting cows still on hand. Up to the present time, the intradermal test shows a little over 98 per cent. accuracy. Granting that one more animal will show no lesions, making three in all, we shall have made three errors in testing over 3,458 head of cattle. This is far better than we have ever been able to do with the temperature test.

In beginning our intradermal test we were a little careless, sometimes purposely so, in regard to surgical cleanliness. While it is impossible to approach surgical cleanliness in using this test, we soon found it paid to be as clean as possible. Very few swellings result from infection and they are quite different in character from the swelling resulting from a positive reaction. The former is soft and inclined to extend along the tail, and passes away sooner. The characteristic reaction from the intradermal test is slightly rounded, very hard, rather painful and persists for several days. As far as our experience has gone, it appears that the reaction from the intradermal test will, on the average, be at its height on the third day. Sometimes, as matter of convenience, a re-examination of cattle after injection may be made on the second or fourth day, but our rule is to make this examination on the third day.

We have found that the intradermal injection should be made with a medium-sized needle; a very small needle might be preferable, but is too easily broken. It is my opinion that the opening in the epidermis made by a large needle gives more opportunity for infection. We find it convenient to administer this test, taking hold around the tail with the left hand, and seizing the bare skin on the under surface between the middle finger and the thumb, pulling it around as far as possible to one side. At first we attempted to pick up the caudal fold. We soon found that this was a waste of time, and in our desire to get along with the work, we were willing to make the injection wherever we could find the skin soft and pliable. It is difficult to describe the insertion of the needle, but herein lies the secret of accuracy. A thoroughly clean needle should be pushed along

under the surface of the skin, only deep enough so that when the tuberculin is injected it will not ooze out through the surface. Three or four drops of tuberculin is sufficient to give a reaction. It is impossible to gauge this small amount on the plunger of any ordinary syringe. For all practical purposes, it is sufficient to watch the point of injection and press upon the spring-handle until a little elevation, something like the size of a navy bean or a little larger is produced. By counting up the amount of tuberculin used, we find that about three drops will produce a little elevation of this size. A re-examination of a herd of cattle that are free from tuberculosis on the third day after injection shows absolutely nothing. It is extremely difficult, and in many cases impossible to find where the injection was made. In a tuberculous animal a swelling appears, which varies quite a good deal in size but is sufficiently large, as a rule, that it may be seen for quite a distance. The swelling is hard, painful and sometimes extends around to the upper surface of the tail, and remains from five to ten days.

In all forms of tuberculin tests an animal now and then will fail to show a clear-cut reaction, either negative or positive. I have not been able to figure up the number of "suspicious" reactions from the use of the intradermal test, but as far as we have gone, the indications are that the suspicious reactions will be much smaller than with the use of the temperature test.

I might say in conclusion that while the tuberculin test seems to be a very simple matter and that farmers and students are inclined to undertake it, it really requires extreme skill, judgment and care, if accurate results are to be expected. Neither veterinarian nor layman can jump in and make tuberculin tests and do the most accurate work at the beginning. We credit our record for accuracy to the fact that our men are well qualified veterinarians, are at this work continually, and receive post mortem notes on all cattle slaughtered, while the animals are still fresh in their minds. Only after working at this testing for six months or a year is a veterinarian able to get the most accurate results. Where a veterinarian is testing all the cattle in

the community he soon gets familiar with the infected herds and has the history of many animals which he tests to aid him in drawing conclusions. Without such history more errors are bound to occur.

Right here I would like to explode the fallacy of the yearly testing of dairy herds for tuberculosis. It seems that when the matter of testing dairy cattle was first discussed it popped into somebody's head to test these cattle every year, and this theory has been blindly followed. We find in our state work that if an open case of tuberculosis is found in a herd, even though the diseased animal is promptly removed and the premises disinfected, one or more additional animals are liable to develop tuberculosis within the next few weeks. There is exposure on the day of the test, and shortly before it, which, theoretically, would cause other animals to develop tuberculosis. Our observation for the past twelve years shows this theory to be absolutely correct in many cases. We had a fine example of results of an annual retest in the State Hospital herd at Farmington, Mo. In 1908 two cows reacted and were removed from the herd with reasonable promptness. The people in charge were instructed to disinfect. There is no doubt but what some of the other animals were probably infected upon or soon before the day of the test was made and did not show any reaction. At any rate, the test in 1909 showed five animals diseased. These five were shipped out a little more promptly. The test in 1910 showed eleven of the best cows in the herd to be diseased. This was about what you will get with the annual tuberculin test when you are handling diseased herds. The results will not always be as bad as this, but will be in many cases. In order to clean up a herd in which an open case of tuberculosis is found, a retest must be made every sixty days, until no reactions are found and then again at the end of a year. Nothing short of this will be certain of results, so that with an annual retest of dairy herds you are likely to find almost as many tuberculous cattle each succeeding year as were found in the beginning. In the meantime the people who are seeking protection from tuberculous milk and

paying for services have gotten nothing for their money. The work of the veterinarian is discredited and the efforts of the city and state officials to correct conditions more or less disgraced. On the other hand, we find herds of cattle in this state which have been in existence for forty years and which do not contain a single diseased animal. When any herd of cattle is tested and found sound, especially if tested twice in succession, to make certain that no diseased animal has been passed over, it can be safely counted as sound permanently, provided no diseased animals are added to it. An annual retest of sound herds of cattle is unnecessary and there is not the slightest reason for it. The annual testing of dairy herds causes a lot of expense and trouble, and can never bring practical results. To save a lot of expense to the public and a lot of worry to the owners of sound herds, a record of these herds ought to be made and a certificate of health renewed annually without an inspection, according to the judgment of some competent person who should be placed in charge of this line of work. A temporary certificate of health running not more than sixty days should be issued to the sound animals in herds from which diseased stuff has been removed and repeated retests should follow one after another until the disease is eradicated. In no other way will the eradication of tuberculosis ever be completed in any state or county.

Veterinarians in private practice ought to bear in mind that human lives are endangered by the presence of tuberculosis among cattle, and this is not a matter where the fees gotten out of such inspections are of primary importance. It has taken a great deal of hard work on the part of the authorities to arouse the public to a realization of the great danger from bovine tuberculosis. All kinds of objections have been made to the inspection of cattle which are used in our dairies or intended for shipment out of the state. Those who have shouldered the responsibility of pushing this campaign of education forward have been accused of many different things, among which was that it was a scheme to get work for veterinarians. It has been argued that the tuberculin test was not accurate. Veterinarians

have been accused of dishonesty. Many other points have been argued against progress in this important matter. We have barely made a start and there is yet a lot of worry before those who assume the responsibility of getting our herds free from tuberculosis. If we attain the highest success and maintain the reputation of the veterinary profession, it will be necessary for all veterinarians to be extremely careful, to be extremely accurate and conscientious in making tuberculin tests and to regard the matter in its true light, rather than a line of work invented to get fees.

PICTURE BOOK OF LIVE STOCK CHAMPIONS.—The following is extracted from the NEW YORK HERALD of May 26th, in the belief that it is of interest to veterinarians: "Philip H. Hale, editor of the *National Farmer and Stock Grower*, in St. Louis, has just published a picture book of "Live Stock Champions," which is full of interest to horsemen. It contains 720 indexed portraits of noted animals, among which are scores of thoroughbreds, trotters, hackneys and draught horses. Schreiber's photographs of Rysdyk's Hambletonian, Ethan Allen, George Wilkes and other old time trotters make the book of lasting value to votaries of harness racing."

MEMORIAL TO DR. CRAWFORD W. LONG.—We have recently had the pleasure of perusing a "special bulletin" issued by the University of Pennsylvania, a memorial to Dr. Crawford W. Long of the class of 1839 (medical), giving an account of the ceremonies of the unveiling of a bronze medallion, which occurred in the medical building on March 30, 1912, to the memory of Crawford W. Long, M.D., who first used ether as an anaesthetic in surgery on March 30, 1842, as shown by original documents presented at the British Medical Association meeting, in London, in the summer of 1910, by Mrs. Frances Long Taylor, daughter of Dr. Long. The medallion is a beautiful piece of work, showing Dr. Long, then less than thirty years of age, bending over a recumbent patient, dropping ether from a bottle held in the right hand on a towel that partly covers the patient's face. The bulletin is extremely interesting reading.

A VETERINARY POTPOURRI.*

BY S. R. HOWARD, HILLSBORO, O.

*"Aye free, off-hand, your story tell
When wi' a bosom crony,
But still keep something to oursel'
Ye scarcely tell to ony."*

Yes, yes, I am still in the same darned, old veterinary profession, and, although I know I am not as thoroughly informed along certain lines as I am wont, still I am what might be called an every-day country veterinarian. Therefore, I speak not as the scribes, but as one having authority.

I may not have accomplished much. I do not claim to have accomplished much, yet it is something to have made a living out of the art for 25 years, and I do claim to have done this in spite of difficulties, obstacles and cut-throat competition that some would not have endured. But such experiences are what makes us optimists.

The district in which I live is rolling and none too fertile, and to tell how little I have sometimes earned during periods of poor crops and financial distrust would challenge credulity. Still I am at the same old stand and thank the Lord I am still paying one hundred cents on the dollar, all of which means that I may be called an "also ran," but I have never been left at the post.

I have often thought of a friend of mine who said he had nothing when he commenced practice thirty years before, and he was still "holding his own."

I have always been my own office boy, done my own stable work, and do yet, attending my horses and cow and am almost and altogether somewhat poky and old fashioned. (Hence the

* Presented before the Ohio State Veterinary Medical Association.

style of this paper. But Mrs. H. says that my horses are fast enough and whoever listens to me will be convinced that each horse's pedigree traces directly back to Imported Messenger on one side, and Rysdyk's Hamiltonian on the other).

Just the same I have never failed to read a select amount of the latest and best veterinary literature, but no obsolete works or back number magazines for me, and it has always been my belief that if a veterinarian had to choose between buying a new coat or a new standard veterinary work, he should do without the coat. The coat will come. A veterinarian does not have to depend entirely upon appearances for results. As for myself I seldom blacken my shoes, I usually grease them, and sometimes I smoke a cob pipe.

Still no one can read it *all*, unless he has nothing else to do. Collective veterinary learning is what we need, and how to cure sick animals is what we want to know.

By the way. The other day I was testing a herd of cattle in which were some marked reactors. The owner asked if I had *ever* tested a herd that was clear of reactors. I had to say "No." How many could have said "Yes" Don't all answer at once. To those answering in the affirmative I will set 'em up to some horse powders.

I believe all papers to be read at our meetings should be censored by a special official or committee. Take, for instance, a long-winded technical paper on tuberculosis with endless thermometer readings. Now a fact or truth can be told in a very few words, but we are all given to wordiness. (Absolutely nothing personal intended.)

We are in no danger of growing tired of this subject of tuberculosis—we are already tired of it—at meetings, especially when it becomes a big wind.

If anything makes one sick of association meetings, it is the uncomfortable, even painful, toleration of long drawn-out (mind I say long drawn out) papers on thread-bare subjects. The presentation of these kind of papers is a custom, I know, but sometimes customs, like old clothes, should be changed—occas-

ionally. Each member on the programme should be previously informed how much time he can have and no more.

Our worthy Ohio president has suggested an exclusive series of high-class technical papers. It is my little one-horse opinion that the rank and file of us would soon quit coming if that condition should obtain. Let us remain in the wider field and yet do deeper plowing.

A general miscellaneous programme, together with the aid of progressive secretaries who have a practical knowledge of our wants, undoubtedly has made our Ohio State Veterinary Medical Society the success it is.

I am convinced that some veterinary meetings do not make veterinary life. Some papers tend nowhere and that keeps good men from ever coming back. But we must meet and do the very best we can. "Boost" is the word. Let us make our comings together experience meetings, intellectual exchanges.

Again, a society membership helps us in many ways. It is looked upon by most people as a sort of guarantee that the members are pursuing legitimate practice, which is usually true.

But, in regard to a programme of high-class exclusive technical articles. High-class technical articles are alright, but not many of them at a general meeting. It sometimes appears to me as if we had quite enough technical, but not enough practical knowledge. I have known graduates that never saw a horse thrown or castrated. I have known two graduates that could not properly tie a hitch strap. I have been told by students of a school that they are not at all required between sessions to continue their studies and practice with a qualified preceptor.

They claimed that the school, during their attendance, furnished them enough practice properly directed. Such graduates should be subject to the re-call and ought to take a post-graduate course in a livery stable. I pity such graduates, not to speak of their patients.

With no desire to lower ideals, and with the most profound respect for all thoroughly trained, energetic and serious minded

investigators, I still maintain that the world nevertheless needs horse and cow doctors educated in the fullest sense, as well as pseudo-pathologists, blood counters, half-baked graduates and hypodermic syringe zealots. All hail to the mud road, isolated, gum boot country veterinarian!

Did you ever notice how many popular titles a veterinarian has?

I have been accosted as Dock, Quack, Farrier, Veteran, Cow Leech, Hoss Doctor, Vertinary, Venitianary, Vetenary, Old Honesty and Day Light Robber.

And so, my young brother, you should steel yourself never to even turn a hair when you are called perhaps anything from a pepper-corn to a brewer's horse. Of course you might hit the fellow in the "snoot," but that will never get you anything.

Once I was asked by a horse doctor if I had ever studied Dr. Kendall's work on the horse. Astounded at my ignorance, the Dr. (?) further asked if I did not claim to be a Venetian Sergeant.

I modestly admitted I was one and told him I had often heard of him and his skill as a surgeon; I was pleased to meet him, etc.

I finally asked him confidentially if he had ever performed "aortic regurgitation." "Yes, several times," he replied, "and I can tell you it is an awful bloody operation."

You are summoned to a horse that is down, where, if you do your duty, you will get him on his feet. No help can be had. You have the self-locking hoist and sling, but no horse to pull him up. How could you raise him?

Answer: Adjust the sling, back the running gears of a farm wagon up to the door, raise one hind wheel, run the other against side of open door, slip a rail between spokes of front wheels on top of coupling pole, tie rope to a spoke of raised hind wheel, and turn wheel toward you, in this way gradually winding up the rope, and so thus raising the horse. When the horse is at desirable height, push a pole between spokes of hind wheels under the hounds, and this will hold the weight perfectly secure.

Did you ever give a pill to a horse and have the pill lodge and close the epiglottis?

I have had two such accidents and I can tell you the symptoms are alarming, not to say embarrassing. The horse staggers and falls as if shot, stiffens out, eyeballs retract, lips draw tight over teeth, nostrils dilate, and he presents a most painful picture. Now don't get rattled. Just quickly pull out the tongue and push it back several times in quick succession, knead the throat, or, better, open the mouth and push pill back with fingers.

I don't have that choking happen any more. I am sure to wet each bolus before it is given. If no water is at hand I just moisten it with saliva and down she goes.

That precaution, of course, is not according to Pasteur, but extremes may be in any direction, as note the following:

I once tested for tuberculosis the 25 Polled Durham cows of Dean Price of Agricultural Department, Ohio State University. The herdsman required that I thoroughly disinfect each thermometer between each reading for fear of transmitting the disease—only 350 times—which I did without a waver. I admit contagious abortion might be communicated with contaminated thermometers, but tuberculosis by thermometers per rectum—hardly.

I shall never forget my first experience with a stomach tube. That was a long time ago. I had never seen one used and I thought I had the directions down fine. Being of a very modest and retiring disposition, it was but natural that I should not wish to display my first attempt before a critical audience.

One night in my stable there was a large draft mare near her end, and, with the assistance of my wife, I decided to try my hand on this mare at passing the tube. Mrs. H. held the mare and lantern, while I did the operating, so called. I had frequently passed a catheter to the oesophagus, and I thought this tube looked very formidable. Still I thought I was doing very well, for the tube, in passing, presented uniformly little, if any, resistance.

The mare stood stock still, and the tube was about all passed

when Mrs. H. directed my attention to the mare's right nostril, out of which the distal end of the tube was slowly emerging. Almost the entire tube must have been coiled up in the pharynx. The tube was easily recovered with no hemorrhage, and then properly passed.

Many veterinarians, as we all know, have quite fanciful signs and cards, but here is a card to which I can attest:

RISSIE BOOZEVELDT,

The Boss Horse Doctor.

Keeper of a Jersey Bull.

Hay for Sale. Also Sweet Cider.

And Rissie is no bad kind of a fellow, but he *will* doctor horses. Means well. Rissie no doubt could have broken into some veterinary college ages and ages ago when all that was then called for was a primitive knowledge of the three R's.

Ah me! it's so different now. There can be no healing for such as Rissie. The veterinary profession now requires a liberal education and much mental, as well as manual labor.

Therefore, it is a profession, pure and simple—a real profession, and not, as some consider it, a mere money making device.

In conclusion, I wish to say this little paper is addressed more to the younger members of our profession, who should never lose faith in the great usefulness of the art, or ever think for an instant that their veterinary education is complete,

“For never yet hath one attained
To such perfection, but that time and place,
And use have brought addition to his knowledge;
Or made correction, or admonished him
That he was ignorant of much which he
Had thought he knew, or led him to reject
What he had once esteemed of highest price.”

The Wisconsin State Veterinary Society will meet at Watertown in August.

NOTES ON ATTENUATION OF VIRUS IN THE BLOOD OF CHOLERA HOGS TO PREPARE A VACCINE.*

BY ROBERT GRAHAM, PROFESSOR OF VETERINARY SCIENCE, KENTUCKY AGRICULTURAL EXPERIMENT STATION, LEXINGTON, KENTUCKY.

During the time the specific cause of hog cholera was considered to be the *Bacillus cholera suis*, there were reports of success in immunizing hogs by injecting the attenuated organism, and some practical hog raisers in Kentucky have great faith in this method and prefer it to serum and virus, for no other reason than that it proved successful in their herds in previous outbreaks, as prepared and administered under the supervision of Drs. H. J. Detmers and Paul Fischer, of Ohio, the latter now State Veterinarian of Ohio. We know, however, that attenuation by passing or registering the *Bacillus cholera suis* or virus in the circulation of a horse was not successful, though at times it seemed very efficient.†

Hence this question of a true vaccine for hog cholera, prepared from the *Bacillus cholera suis* and even by heating the virus contained in the blood of sick hogs, is not new. The latter was attempted at the time Dr. Dorset proved the true cause of hog cholera, and even by De Swinetz, his predecessor. Irregular and discouraging results included the attenuation of the *Bacillus cholera suis*; the liquid, dried and powdered cholera blood, by heat and chemicals. So ineffective was the vaccine prepared in this manner that we find no record of their work, for perhaps they have discovered and realized the impossibility of a satisfactory vaccine in the early stages of their investigations, and brought them to a hasty end.

Literature and data relating to this subject, attenuating by heat, are therefore relatively scarce; in fact, entirely wanting,

* Read at meeting of Kentucky Veterinary Medical Association, February 28, 29, 1912, Frankfort, Ky.

† Bulletin, Kansas Experiment Station No. 157, W. E. King.

but without such records before us it has been generally understood that the preparation of a true hog cholera vaccine from the virus held in cholera blood, by applying heat, was impracticable. The great demand in Kentucky for Dorset-Niles anti-hog cholera serum prompted a few experiments along this line, in that if a successful vaccine could be prepared, we could come that much nearer supplying the demand for immune hogs in our state.

The manufacture of the Dorset-Niles anti-hog cholera serum was not discontinued for these experiments, nor were such experiments carried on in the field, but they were conducted at the laboratory in conjunction with serum production. The two works at times were conflicting, but the few collected experiments on about sixty hogs inoculated with attenuated virus may serve to confirm the unreliability of this procedure or excite criticism by those who have been more successful in producing immunity against hog cholera in swine by this method.

* Drs. Dorset and Niles have recently conducted an experiment including the inoculation of twelve hogs with virus contained in cholera blood, after attenuating one-half hour, at 60 degrees C., which resulted in the death of eleven hogs from acute cholera, the other developing the chronic form of the disease.

** Dr. A. T. Peters, of Illinois, records success by this method; in fact, inoculation experiments include 16,000 hogs, the results of which had not all been received. His work extends into the field as shown by the large number inoculated, at the owners' request, after being advised of the uncertainty of results. His method of attenuating virus consists of drawing off the clear serum from the cholera blood and attenuating at 60° C., for one-half hour. The attenuated product is then carbolyzed and used in the following dosage:

50-pound pigs, 2 cubic centimetres;
100-pound pigs, 2½ cubic centimetres;
200-pound pigs, 3 cubic centimetres,
and 1 cubic centimetre for each additional 100 pounds.

* Report of Dr. M. Dorset, U. S. Live Stock Sanitary Proceedings, 1911.

** Report of Dr. A. T. Peters, U. S. Live Stock Proceedings, 1911.

The results indicate success in many herds, though the report was very incomplete at the time it was submitted.

* Ulenheuth, of Germany, has published results in attenuating the virus. He states that it is practically impossible to find out the influence of different temperatures on the virus of swinepest: 78° C.-70° C. killed virus in one hour; 58° C. for one hour killed the virus and in some cases it did not; 60° C. for sixteen to twenty-four hours, it lost its virulence; twenty-four hours' heating, 45-46° C., did not lose the power to produce disease.

The following notes and experiments are an illustration of the inconsistency of this vaccine, with conclusions demonstrating that, with our results, it would be unsafe to use under ordinary farm conditions. Many of these experiments have, no doubt, been duplicated by every experiment station interested in serum production, at some other time.

Our technique has been simple, yet what we considered sufficient for attenuating virus in the liquid blood if such were possible. It was as follows, except when designated otherwise in certain experiments:

Technique.—The virus was drawn from the carotid artery under aseptic precautions in advanced cases of hog cholera. The blood so drawn was defibrinated and placed in Erlemeyer sterile flasks loosely stoppered with sterile cotton. The flask was then placed in a luke-warm water bath and gradually brought up to a certain temperature (50-60° C.). Time was recorded from the instant it reached this temperature, and held at this degree for one hour, or one-half hour. The thermometer was placed about one and one-half inches from the surface in the water bath. The Erlemeyer flasks were then allowed to cool in room temperature from one to two hours, and then placed in the ice chest after carbolizing and sealing the container air tight. The virus so heated and cooled was used the same day, unless otherwise stated, in one-half to two centimetre doses, in intramuscular inoculation in hogs weighing from 30 to 125 pounds.

Lack of space prevents us from publishing a detailed account

* Arbeiten a. d. Kaiserl. Gesundh.

of the experiments conducted by Prof. Graham in connection with the above article, on about sixty hogs, including over eighty carefully prepared and lengthy tables, which represent an amount of work that is inestimable.

At the meeting of the Kentucky Veterinary Medical Association in February, Dr. Graham presented this paper in synopsis, covering experiments which had been carried on from time to time at the Kentucky Experiment Station on "The Attenuation of Virus in the Blood of Cholera Hogs."

These experiments involved attenuations, at 50° C., 55° C., 60° C., for periods varying from one-half hour to one hour. In all, as we have said, about sixty pigs were inoculated with these various attenuations. These experiments were not carried into the field, but confined to the experiment station herds.

The conclusions drawn from these inoculations were as follows: "The variation in susceptibility of swine is the seat of irregularity of results in these experiments; as experimentally shown, the amount necessary to protect one hog might be sufficient to kill its mate. Different strains of virus also vary in virulency. It would seem advisable to test the strains by animal inoculation, but this would not give a true insight into the strength of the vaccine in that the test hogs might not be susceptible, and produce a perfect test. Such being obtained would not throw a light on the outcome of its general use, as the question of variation of susceptibility must be considered and ascertained in each herd, and each individual member of the herd, before regular results could be expected.

CONCLUSION.

" 1. Inoculation of attenuated virus at 60° C. for one hour may produce cholera.

" 2. Inoculation of attenuated virus at 60° C. for one hour generally does not produce sufficient immunity to protect hogs.

" 3. Inoculation of attenuated virus at 60° C. for one half hour generally produces the disease.

“ 4. That the temperature to which the liquid blood must be heated to produce a reliable vaccine is variable.

“ 5. The same dose of vaccine may kill, protect or non-protect upon inoculating animals of the same size, under similar surroundings.

“ 6. Virus so attenuated by heat and not carbolized may retain the properties of original vaccine for at least twenty-four days as far as disease-producing properties are concerned.”

THE LEONARD PEARSON MEMORIAL BOOK has just been received from J. B. Lippincott Company, publishers, of Philadelphia. There are a limited number of copies in the hands of the secretary, which can be obtained by addressing C. J. Marshall, Thirty-ninth Street and Woodland Avenue, Philadelphia. Price, cloth binding, \$2; morocco binding, \$3.

ONE HUNDRED AND THIRTY-FIVE American thoroughbreds exported to Australia last winter were recently sold by auction at Sydney for \$89,455, an average of \$662. St. Savin topped the sale at \$15,000, but some of the brood mares did not bring enough to pay for their transportation.—(*New York Herald*).

C. K. G. BILLINGS is going to ride the trotters Charley Mitchell, 2.04 $\frac{1}{4}$; Lewis Forrest, 2.06 $\frac{1}{4}$, and Wilmering, 2.12 $\frac{1}{4}$, under saddle in Russia this season, and he may drive Uhlan, 1.58 $\frac{3}{4}$, and Charley Mitchell to pole. The Billings horses are now safe in Moscow, and Mr. Billings is on his way there. He expects to return in time to see the Cleveland Grand Circuit meeting, beginning July 29.—(*New York Herald*).

NEW BREED OF PET DOG.—Professor Karl Pearson, Director of the Laboratory for National Eugenics in the University of London, exhibited to his associated scientists in a conversation at the Royal Society a new breed of dog which he calls “pompek.”

It is obtained by crossing Albino Pekingese spaniels with black Pomeranians. The offspring are mostly black. The new breed resulted from experiments in regard to heredity.—(*New York World*).

PROTOZOIC STOMATITIS OR SORE MOUTH OF DOGS.*

BY ALLEN A. FOSTER, D.V.S., CITY BACTERIOLOGIST, MARSHALL, TEXAS.

In the preparation of a paper on this subject one must necessarily confine himself to personal observations and experiences, since the condition is not described by any of the various textbooks on canine diseases. This is practically a new disease in this section, as I am unable to trace it back prior to the year 1900, when an entire pack of fox hounds were affected. Since that year it has been constantly with us and many valuable hunting dogs have been lost by its ravages.

While the disease is present all the year, more cases are noticed during the summer months. No particular breed of dogs seem to possess immunity, as it is observed in setters, hounds, pointers, terriers and collies. Occurring more frequently in the order named, perhaps, on account of the fact that setters and hounds outnumber all other varieties. It is observed in the city and the country dog, the hunting and the house dog, the well-kept and the street dog, so it would seem that the different conditions in which dogs are kept do not affect the disease. It is also observed in puppies and very old dogs, so age is not a factor concerned.

This disease is very widely disseminated; especially is this true of the South, and I believe is more frequently found in the marshy sections.

The general symptoms of the disease are of most uniform character and easily recognized. I know of no other disease that could be confused with it. The owner's attention is first attracted by the champing noise made by the jaws, and a delicacy in eating. Seems sluggish and is not playful as usual. Examination of the lips at this stage will reveal a sticky substance adhering to them. Cheeks seem to be hot and painful to the touch, with a very offensive odor from the mouth.

* Read before the Texas Veterinary Medical Association, Fort Worth, March, 1912.

This continues for about twenty-four hours; when the veterinarian is called he finds the same conditions, only more aggravated. The temperature is from 103 to 105 degrees, respiration hurried; strings of this muco-purulent material dribbling from the mouth which seem to be very sticky and adheres to the legs as the animal endeavors to wipe it off. Pulse from 120 to 150 and bounding. On raising the lip we observe a yellowish white film or membrane covering the surface, varying from the size of a hazel-nut to covering the entire surface. Removing this, we see a denuded surface very highly congested, hot and painful to the touch. The openings of the ducts leading from the mucus glands may be easily seen and by holding the membrane for a few seconds the small droplets of the secretion collect at each opening. Ordinarily at this stage of the disease the infection is confined to the mucous membranes external to the teeth. As the case proceeds, the infection extends to the tongue, the pharynx, and sometimes to the larynx. When this latter structure is involved there is a slight cough. As the case proceeds further there is great emaciation, depressed look from the eyes, pulse becomes weaker and often intermittent, respiration slow and irregular, temperature subnormal, diarrhea and dysentery associated with marked tenesmus, membranes of a pale yellowish cast. This stage continues about twenty-four to forty-eight hours, often longer, patient becoming weaker and weaker, and finally dying in coma.

On post mortem we find the blood in long-continued cases to be very thin and watery, while if the case be very rapid the blood usually is dark and clots quickly. The kidneys, intestines and spleen frequently show petechiæ. The general macroscopic lesions vary considerably, so to undertake to outline a fixed and definite picture would be impossible.

There is always found the dark areas covering the infected regions of the mouth which may be accounted for by the tissue changes due to the presence of bacterial toxins at the point of infection.

Microscopic examination of sections made through these

lesions, stained by Jenner's method, reveal the presence of a protozoic infection of the mucus glands, which is associated with pyogenic streptococci. These are found in the glands themselves and also in the tubes near the surface. I have also found them in small numbers in the muco-purulent exudate. These parasites invade the mucus glands as the *Dermodex folliculorum* invade the sebaceous glands, and likewise are associated with pyogenic infection. My experiments thus far do not permit me to attempt to classify the protozoa; however, I will describe it as best I may. I find them to be actively motile, possessing a movement indicative of bi-polar flagella, reproduce by simple division, will grow on artificial media, presence of chromatin granules, non-sporulating, 10 m. in diameter, 40 m. in length; stained specimens from pure cultures frequently appear as crescent shaped on account of their movement; stain with any of the aniline stains; easily demonstrated in tissue sections stained by Jenner's method of staining protozoa; shape resembling a grain of barley; injected into the mucous membranes of healthy dogs will produce the disease, from which it may be again obtained.

Granting that this is the etiological factor in sore mouth, the next great question arising is the successful method of treatment. Since my experience has led me to conclude that the general systemic disturbances are produced by the absorption of the toxic products of the parasite and accompanying pyogenic bacteria, I have directed treatment along that line.

About the first thing I do to a case is to flush out the bowels with cold enema of normal salt solution, which reduces the temperature and assists in the elimination of the toxins already absorbed. Next I remove all mucus and diphtheritic membranes with cotton and inject into the mouth full strength of hydrogen peroxide, which cleanses the surface and opens up all mucous ducts, thereby allowing free escape of any retained toxins. I then give a dose of bacterin made from the associated pyogenic organisms. I continue the peroxide treatment three or four times a day and the enema as often as necessary to keep the temperature down. If the general symptoms indicate the need of stimu-

lants or heart tonics I use them, otherwise I give no medicine except intestinal antiseptics, preferably the sulpho-carbolates. Forced nutrition in the form of small balls of ground meat, beef extract and eggs are all essential to the treatment. The mortality in cases reached in the early stages rarely exceeds 15 per cent. If the diarrhea develops, starch and opiates may be given as an enema.

Summary.—A protozoon disease, produced by an unclassified organism invading the mucous glands of the mouth, associated with pyogenic streptococci. Systemic disturbances produced by the absorption of the products of the two organisms and death from toxæmia. All dogs are subject to the disease and one attack does not confer immunity.

NOTE—There are many things concerned with the organism that remain to be worked out. I am calling it a protozoa, however, this remains to be proven. I only offer these few findings in advance in order that I may be instrumental in causing others to work along the same lines. I am thereby obtaining the facts in connection with this much dreaded Southern disease of dogs.

The Alpha Psi Fraternity recently installed two new chapters, the seventh and eighth of the group.

The Eta chapter was installed in the Division of Veterinary Medicine of the Kansas State Agricultural College, at Manhattan, on April 5, 1912, by Dr. H. E. Kingman, of Fort Collins, Colo., president of the National Council. The chapter was started with eight active members and four honorary members, Drs. Schoenleber, Burt, Dykstra and Rogers of the Faculty. The constitution and the by-laws of the Eta chapter make scholarship of paramount importance as far as eligibility to membership is concerned.

The Theta chapter was established in the College of Veterinary Medicine of the Alabama Polytechnic Institute, at Auburn, on April 5, 1912, by Dr. A. M. Jansen, of Columbus, Ohio, treasurer of the National Council. He was assisted in the installation ceremonies by Dr. D. J. Meador, of Selma, Ala. The chapter organized with twelve active members and three honorary members, Drs. Cary, Hallman and Howell of the Faculty.

REPORTS OF CASES.

AN OBSCURE CASE.*

By I. B. IRWIN, V.S., Stonewall, Can.

My reasons for the rather peculiar heading given to this paper and my object in writing an account of the following case are: First, it is amongst the most interesting that I have had the satisfaction of watching, and, second, since I am unable to account for the symptoms shown or to find a known cause for them I have written these lines hoping there may be some members present who have seen cases of a similar nature, and if they know the cause will give us the benefit of their experience.

In the afternoon of July 17, last, a telephone message came to our office stating that a cow owned by a party at the other end of the city had taken suddenly ill and required treatment at once. I was unable to get any symptoms of the case over the 'phone, as a neighbor had sent the message, so taking such medicine and instruments as I thought necessary, started at once for the place. On arriving I found a dark red Jersey cow of medium size and fairly good condition and from outward appearances looked to be of a good milking strain. She had calved about two months previous and had been milking well since, having spent the summer in the pasture.

I found her standing in a small field where she had been pasturing for the last few weeks, and on one side of this field were some vacant lots, now used as a public dump, and to this she had access.

The boy who came with me to the field told me that she had been having dizzy spells all day and that she would begin walking around in a circle getting faster and faster steadily until finally she would fall, when she would lie for about ten or fifteen minutes, when she would again get up and apparently be all right for perhaps an hour, when another dizzy spell would come on as before and she would fall again. She had been having these spells since about 9 o'clock in the forenoon. On examina-

* Presented to the Veterinary Medical Association of Manitoba, Brandon, March, 1912.

tion I found the muzzle dry; the eyes dull looking; the temperature 103.4; pulse about 65, and respiration about 25. She would move around without any difficulty; showed no nervousness; walked steadily and without any evidence of pain or discomfort; mucous membranes appeared normal.

I waited for about half an hour hoping to see her in one of these attacks, but, being disappointed in this, I had her taken to the barn (as the day was quite warm and there was little shade where she was standing). She walked to the stable quite easily and there I gave her a drench consisting of:

R. Ol. Lini., 1½ pts.

Ol. Turp., 1 oz.

Chl. Hydrate (50% solution), 2 oz.

She swallowed this drench readily and I left, asking them to 'phone her condition in the evening and saying I thought the trouble was due to her eating something that did not agree with her.

We were again called by 'phone about 6 p. m., and were told that the cow had had two other attacks since I had been there and was little, if any, better.

My father having got home by this time, we both went on this visit and found her coming out of another spell. She was lying in a comfortable position in the barnyard (we were told they found it impossible to keep her in the stable during the attacks and had let her outside where she would have more room). Her condition appeared much as in the afternoon, except her pulse was now about 70 and she looked considerably more haggard. My father had the same history of the case that I had and also considered the trouble due to something she had eaten. We now gave her a hypodermic injection of strychnine sulphate and digitalin and waited for about 20 minutes in the hopes of seeing her in one of these spasms, but, as before, none came on. At this time my father had to go on another call, saying he would call for me in about two hours and left me to watch her, and instructed me, if no attack came on, to repeat the dose of strychnine and digitalin in an hour.

I waited for about an hour and ten minutes and, seeing there was no indication of another spasm coming on, prepared the second dose, and was just on the point of giving it when I noticed her begin to step around in her stall in a rather uneasy manner. Her eyes began to roll, and breathing become hurried and labored; suddenly she made a rush backward breaking the

rope with which she was tied; every muscle in her body appeared to become contracted. She circled backward with limbs so stiff that she seemed utterly incapable of either bending them, or using them as a means of balancing herself, and without the least idea of steering, went fiercely in a backward direction, her fore limbs going faster than her hind, and neither one seeming to be able to keep up with the body. She made almost a complete circuit of the stable floor, overturning barrels, boxes, bags and everything with which she came in contact, finally falling on her broadside quite near the place from where she started.

She lay rigid for some minutes, her two upper limbs standing out straight, and could not be flexed; muscles quivering; her eyes bulged out and showed some reflex action when touched. Her heart beats had now gone up so high that they could hardly be counted, and were hard and strong; breathing fast and labored.

She lay in this condition for about fifteen or twenty minutes when her muscles gradually began to relax; her limbs to flex, and eyes to blink when light was near them. In about another half hour she regained her natural recumbent position, her heart and respirations having become greatly improved.

The boy who was with me said he had not seen her have one as bad as this before, but that they had all been of a similar character, and that she had got over them quicker.

Thinking that the strychnine we had given her previously had been more of an aggravation than a cure, I withheld repeating the dose and reported the whole matter to my father who arrived a few moments later.

We now decided to give reverse treatment and, after making sure that she was able to swallow, gave her a drench containing

R. Chloral Hydrate, $1\frac{1}{2}$ oz.

Potassium Bromine, 2 oz.

Ol. Lini., 1 pt.

In another half hour, finding her still comfortable in the same position, we left for the night, leaving another drench about half the dose of the last, to be given if any further spasms occurred. Gave an unfavorable prognosis and asked the owner to report the condition in the morning.

We heard nothing further of the case until about 4 o'clock the next afternoon when we were again 'phoned, saying the cow had got up about four or five in the morning and had eaten a

little bran mash, about six she had had another very mild attack when they had given her the medicine we had left, and wished to know how they had better treat her now.

We could hardly believe the report, as we had given up hopes on receiving no word from her in the morning. We now went over to see the case again and found her standing quietly in the stable. Her bowels had operated freely during the day and she had had no other attacks since morning. Her pulse, respiration and temperature were practically normal and with the exception of a few external bruises and a rather gaunt appearance, there was nothing to mark the previous days experience.

She was kept in for the next day and fed on grass and a few doses of condition powders in bran mashes. The next day she was put back in the pasture apparently as well as ever.

I heard nothing further about her until about the latter part of September when I met her owner, and he told me that she had been in good health all summer, and had never shown any signs of another such attack.

ENTERECTOMY AND ANASTOMOSIS OF THE INTESTINE OF THE DOG.*

By STANLEY T. MARTIN, V.S., B.V.Sc., Winnipeg, Can.

This operation while common in the practise of human medicine is not made use of to any extent in canine practise. In certain cases, as of foreign bodies or where a bowel has become injured and gangrenous, the only chance of saving the animal's life depends upon the excision of the diseased portion and the union of the cut ends. Our chief difficulty seems to be the making of a correct diagnosis soon enough, that is before the patient has become exhausted or septic peritonitis has set in.

Within the last few months I have had the privilege to assist in the performance of this operation on a few dogs simply as a clinic with excellent results; of course, it must not be forgotten that these animals were comparatively healthy and not suffering from any disease of the intestine.

The first animal operated on was a large fox terrier, the preliminary preparations were the same as any abdominal operation, starving for 24 hours, etc., the dog was placed on the operating

* Presented to the Veterinary Medical Association of Manitoba, Brandon, March, 1912.

table and chlorformed, the abdomen was shaved and thoroughly disinfected. An incision was made in the median line and the bowels exposed. A sterile piece of gauze with a hole in the centre was taken and laid over the wound, the portion of bowel to be removed was then pulled through the hole, this gave a clear field for operation, as well as preventing blood, etc., to leak back into the abdominal cavity. The contents of that portion to be incised were forced back about 1 inch above, and below, and the bowel clamped, this can be done either by tying with a tape or by rubber bands. All branches of the mesenteric arteries that supply the region to be ligated. The bowel was then severed with a pair of scissors, taking along with it the mesentery that was attached.

There are two ways in which the bowel can be united, 1, end to end or 2, parallel; in this animal we used the parallel method. The cut ends of the bowel were first sewn up, this was done by running a purse string suture around the end and tying, the ends were tucked in and the serous coats brought together by interrupted sutures. The two ends of the bowel were now laid parallel to each other, and the serous coats sewn together, an incision was made in both portions of the bowel about an inch long and the adjacent mucous coats brought together and united by sewing the serous coats. The bowel was cleansed and warmed by covering with a hot towel, then placed back into the cavity and the wound closed by sewing both muscle and skin with one suture. Care must be taken that the cut edges of the mesentery are brought together, else a portion of the bowel might pass through and become strangulated.

This animal was kept warm and quiet, fed milk for the first few days, the external wound was kept clean with a weak antiseptic solution, at the end of the first week the animal had regained his normal spirits and to all appearances made a good recovery. Three weeks after the first operation we again chloroformed him, opened up the abdominal cavity, removed another portion of bowel and united it by the end to end method; this is done by bringing the ends together and passing a suture through the muscular and serous coats till the bowel is united. The drawback to this method is that often a stricture results at the point of union.

This animal we destroyed and found the results of the first operation to be excellent; the two portions were entirely united and only a few of the stitches could be seen.

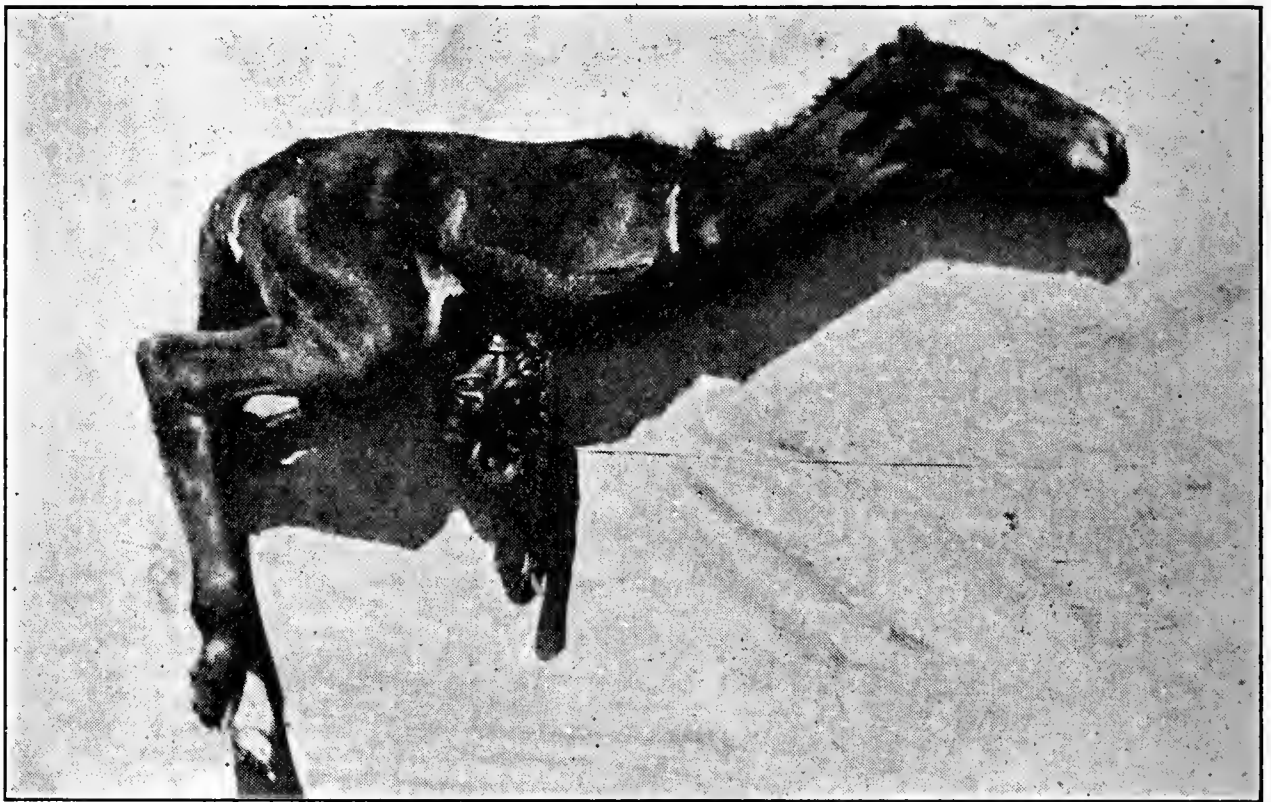
The second dog was operated on in the same manner, the bowel united by the parallel method. This dog to all appearances made a good recovery.

The third dog I operated upon myself, removed about 6 inches of the bowel and united it by the end to end method. This dog to all outward appearances made a good recovery. One month after the operation the dog was destroyed, and the portion of bowel operated on removed. When severing the bowel I found that it was full of string and rubber bands which had become attached to the mucous coat at the point of union, these the dog must have eaten before being operated on.

A MONSTROSITY.

By A. D. HUBBELL, M.D.C., Los Angeles, Cal.

The sire of this colt is a standard bred trotter and also the dam. The colt was entered in all of the Pacific stakes, but as we could not put on any front legs she was withdrawn. She



had no signs of a scapula on either side, and the sternum back as far as the navel was open, so you could see all of the organs working. She lived for five hours and then the owner destroyed her.

AZOTURIA.

By S. J. ALCOLAY, D.V.M., Le Sueur, Minn.

The fact that two gentlemen have written on the subject of azoturia in your last month's issue is sufficient proof to believe that this is the season in which this malady is made more manifest than in any other season of the year.

I agree in every word these gentlemen have said concerning the treatment. Their ways of dealing with this disease and their therapeutic measures are almost identical.

I wish to describe my way of curing this disease. I had more than one horse to treat, and of either sex. I am pleased to say that I saved every one of them by following a very simple procedure and by using the cheapest available drug; also, slings were not used.

I shall ask the favor to have room in your valuable REVIEW, wide enough to state two of the worst cases I treated.

First Case—John Nocker comes to town with his team of horses to have them shod. He drove a few miles from his house to our village, bound to the blacksmith shop. His off horse all of a sudden acts as if he had stringhalt. He lifts up his left hind limb, as high up as to reach the abdomen, makes a jump while the leg is hanging, and in this way advances by making some short strides. It took us about ten minutes to bring that horse from the blacksmith shop to the stable, a distance of about 20 rods.

John was much alarmed. His means are very limited. Symptoms: No sweating at all. John claims the horse has sprained himself while crossing the bridge. I was educated by our worthy dean, Dr. White, that quite often a farmer will rather mislead the veterinarian by giving the anamnesis of his case. So I was at a loss. It could not be stringhalt as the horse could make no use of the leg at all, while in stringhalt the horse is able to bear weight on the afflicted limb. The horse had not been overfed. John said he only fed him two quarts of oats a day.

But this was Monday; the horse was looking at his sides; eyes dusky brown; there was some manure in the rectum, the bladder moderately full.

Diagnosis—Azoturia.

Treatment—At 11 a. m., one quart linseed oil to one-half ounce turpentine, given in two doses one hour apart.

Hot fomentations over the loins and the paralyzed leg every hour.

At 3 p. m. gave Pot. Nitrate, 4 oz.; Fld. Ext. Nucis Vomicae, 3 drams; Water sufficient. Sig., one cupful every hour.

At 6 p. m. the horse had not made water. One ounce of sweet spirits of nitrous ether was given. At 9 a. m. the next day the horse began to use his leg. Some blister ointment has been rubbed on loins and joint, this very sparingly. At 6 p. m. the same day the horse was fine. In three days the horse was at home.

Second Case—A neglected case of azoturia treated by a licensed Dr., deserving rather the title of quack.

I used saltpetre and nux vomica as in the above prescription, 2 ounces a day for six days. The horse responded to the treatment after he had two pounds of saltpetre.

Let me hear some encouragement or criticism from some brother veterinarian.

A SIX HORSE-POWER HORSE.—A correspondent of a French newspaper desiring to ascertain the actual strength of a powerful horse, visited several of the stables that use the finest horses in Paris, selected an eight-year-old Percheron which for three years has been engaged continually in hauling cut stone for building purposes. He tested the animal and it was able to haul a block of stone weighing thirteen and a quarter tons, placed upon a car that weighed four and a half tons, making a total weight of seventeen and three-quarter tons. This is a task to which six horses would ordinarily be put.

RECORDS on file in the Bureau of Veterinary Service, New York State Department of Agriculture, show rabies quarantines to be in force in nine towns and one incorporated village of that State. Veterinarians, health officers and members of boards of health are earnestly requested to report at once to the Commissioner of Agriculture all cases of rabies or suspected rabies coming to their attention, so that prompt and effective action may be taken to control the disease.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

EXCEPTIONAL CASE OF EQUINE TUBERCULOSIS [*S. B. Vine, M.R.C.V.S.*].—Aged seven years, this bay mare had congestion of the lungs, which was treated with stimulants and tonics. Two days later began the appearance of several buds along the lymphatic vessels of the abdomen, chest and hind legs. Malleined, she gave no reaction. The buds increased in number all over her body, ripened and discharged ordinary pus. Treated for pyemia, the animal was soon covered with numerous abscesses. Some were quite large. Some thirty of these were opened one morning. Treated with tonics, stimulants and antiseptics, the animal improved some for a while but soon returned in her bad condition. She was destroyed. Post mortem showed a spleen with three caseous masses; the liver was also diseased and miliary tubercles were present in the lungs. The lymphatic glands of the mesentery, the abdomen and the bronchia were exempt from disease. In the heart the auricles were found ossified. The examination of the lesions found them to be tuberculous in nature.—(*Vet. Journal.*)

FOREIGN BODIES IN DOG'S THROAT [*J. Basil Buxton, M.R. C.V.S.*].—Records of three different cases observed by the author. In one a fox terrier dog had a swelling as big as an orange which had developed in the region of the left submaxillary gland. Explored with needle, it gave issue to blood-stained serous fluid. Opening enlarged and the cavity explored, a sharp point was felt. It could not be removed with forceps, but finally, by being pushed from outside into the cavity, a large tin tack was extracted. Recovery followed.

In a second case a full-grown collie had a swelling in the intermaxillary space. It contained sero-sanguineous fluid and small quantity of pus. Nothing was detected in the cavity of this abscess until a week later, when on second examination a hard, wire-like substance was detected. It had to be snapped for removal. It was a darning needle with thread.

With the third case, a black pug puppy, it was a hard substance felt on the left side of the neck with the point pushing under the skin. The body extracted proved to be a lady's ordinary black-headed hatpin, 10 inches long. The puppy measured only 12 inches from the angle of the jaw to the root of the tail.—(*Ibid.*)

HYSTERECTOMY IN AGED BITCH [*J. Stewart Wood, M.R.C.V.S.*].—This slut, nine years old, presents symptoms of purulent metritis and immediate removal of the womb is advised. Morphia is administered and chloroform after. The abdomen open exposes the bladder full of urine and ready to protrude. It is emptied with needle. The two horns are much distended and they are with difficulty drawn through the abdominal wound. The body of the uterus is ligated and both horns, attached to the stump of the uterine body, are removed with the ovaries. The abdominal wound is closed with catgut and the skin with silk sutures. The animal, exceedingly weak, was placed in a "Rogers veterinary brooder" (an incubator, I suppose), and kept comfortably warm. The wound healed rapidly and complete recovery took place in ten days.—(*Vet. Rec.*)

AN INTERESTING INGUINAL HERNIA [*W. Jamieson, M.R.C.V.S., and Prof. F. Hobday, F.R.C.V.S.*].—Six-year-old Yorkshire terrier bitch, weighing three pounds when four years old had a swelling the size of a walnut in the left groin. This has enlarged and now is as large as a goose egg, almost touching the ground during progression. The hernia is quite irreducible, and even when chloroform is administered it was with difficulty that the contents could be returned in the abdomen. During the careful manipulations required, a small hole was made in the sac. The contents were the uterus, the intestine and a portion of the intestines. They were returned in the abdomen. A ten-day catgut ligature was applied to the base of the sac and several sutures applied round it to strengthen it and close the canal. The skin was sutured with silkworm gut and the wound treated antiseptically. Uninterrupted recovery followed.—(*Ibid.*)

PARALYSIS BY MELANOSIS [*Fred G. Edwards, F.R.C.V.S.*].—Ten-year-old gray hunter gelding becomes lame on the near foreleg; walking sound, he drops on a trot. With time the lameness increases and then the horse went lame walking down hill;

then he stumbled, moved sideways and became dangerous to ride, as occasionally in cantering he would lose power of his near fore, would nearly fall and saved himself with great trouble. He afterwards developed roaring. His upper lip was observed twisted to the off side. The near eye was more closed than the off. The near ear lopped down. The shoulder muscles grew atrophied. He dragged the near hind leg and knuckled over the fetlock, until finally the entire near side became partially paralyzed. Destroyed, melanotic deposits were found over the coverings of the cerebellum and in the tracheal, bronchial, iliac, pharyngeal, prepectoral and submaxillary lymphatic glands. The treatment had consisted in the administration of arsenic and iodide of potassium.—(*Vet. News.*)

ANTI-STREPTOCOCCAL SERUM [*E. Alfred West, F.R.C. V.S.*].—Four-year-old colt recently bought is off his food and has a temperature of 104° F. He is treated by the stable superintendent, but his appetite leaves him, his temperature rises to 105° , the visible membranes get yellow, and then laminitis of both fore feet takes place. Lungs are healthy by auscultation. Treatment poultices of the feet, salines, salicylate of soda, digitalis and quinine. No change takes place for four weeks of that condition, except two or three small abscesses of the submaxillary space. Streptococcal infection is diagnosed. Two doses of anti-streptococcus serum are obtained and given one after the other at intervals of forty-eight hours. The effect was magical. "The temperature which for five weeks had ranged from 105° to 106° dropped twelve hours after the first injection to 102° , and two days later, or twenty-four hours after the second injection, to normal, the lameness disappeared and the appetite returned. In a week the patient was well."—(*Vet. Rec.*)

INVAGINATION OF THE STOMACH AND SPLEEN IN THE ŒSOPHAGUS [*W. Pauer, M.R.C.V.S.*].—Two-year-old Newfoundland dog had gastritis with frequent attacks of vomiting. This last seems to have become a habit with him. One morning he was found dead in the kennel. *Post mortem*: Stomach was first looked for, as poisoning was suspected. It is not found in the abdomen. In opening the chest and exposing the heart and lungs, "a large cylindrical swelling was observed; it was the œsophagus with the stomach turned inside out and the spleen inside it. The stomach was black from strangulation and so much swollen that it could not be withdrawn by traction. The

entire œsophagus was removed and slit up. It measured four inches at the pharyngeal end and nine and one-half inches at a distance of ten inches from the cardiac end, where it again measured four inches."—(*Vet. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

OLD LACERATION OF THE SPLEEN BY KICK FROM A HORSE [*Mr. Vigo, Army Veterinarian*].—Four-year-old stallion is noticed sick at 5 o'clock one afternoon. He shows great prostration, staggering walk, cold extremities, abundant cold sweat all over; he is pulseless and the mucous membranes are pale. Dyspnea is much marked. Left in a box, he lays on the right lateral decubitus. Internal abdominal hemorrhage is diagnosed and death takes place after two hours. The lesions found at post-mortem can be recognized as recent and old. Among the first, spleen is found very large and black. The external capsule is separated from the splenic tissue and torn in its entire posterior face. It covers a thick clot. The edges of the tear are not inflamed. The abdomen contains all the blood of the body. There is an enormous clot. The old lesions are indications of traumatism by kick. They are two or three months old. The sixth, seventh and eighth left ribs, the lungs and the spleen are involved. The seventh rib is fractured, so is also the sixth. There is pneumonia localized at the seat of injuries of the ribs. The pleura is thickened. The splenic lesions consist in a bloody pouch as big as the fist, with walls two centimetres thick. It has two open spots imperfectly closed by organizing clots of blood. They were the constant threatening lesions of the fatal hemorrhage, which finally took place.—(*Rev. Gen. de Med. Vet.*)

CEROMYOMA OF THE ŒSOPHAGUS IN A HORSE [*Mr. Bonnigal*].—Old twenty-two-year-old draught horse has never been sick except an attack of pharyngitis ten years ago. Suddenly his appetite is gone. Carefully examined, no indication of sickness is detected. Soon, however, as a drench is given to him, he is taken with spells of choking, general tremblings, cold sweats. Diagnosis is uncertain and, taking in consideration his age and his good, fat condition the owner sends him to the

butcher. *Post-mortem*: All the organs are healthy except the œsophagus, which is much enlarged, but the red striated muscle of that canal is continued to the cardia by a very hard enlargement, elongated from forwards backwards and between the superposed muscular layers there is an elongated, whitish, hard tumor, as big as the finger and measuring six centimeters in length. With the appearance of a lymphosarcoma, the microscopic examination classes it as a ceromyoma.—(*Presse Veterin.*)

TOTAL ABSENCE OF TEETH IN A DOG [*Prof. Dechambre*].—This was observed in the skull of an English toy terrier, thirteen years old, which died with a paralytic stroke. During life the buccal cavity has been noticed as being toothless. There was on the palatine arch two bucco-nasal fistulæ. The skeleton showed no trace of teeth nor of alveoli on the superior maxillary. The crest which ordinarily is formed by the insertion of the molars did not exist. The branches of the lower maxillary were not united and showed no indication of the bony support for the incisive arch. There were, however, three small depressions as aborted dental alveoli. The two maxillary halves were incomplete and partly atrophied. The animal had lived to old age because of the great care he received. His food consisted of milk soup and sometimes of crushed cooked liver mixed with soft bread.—(*Bull. de la Soc. Cent.*)

RUPTURE OF THE PRIMITIVE AORTA [*A. Esclanze, Army Veterinarian*].—Mare, of seventeen years, jumps a bar in a *ménage*, gallops for some fifty metres, staggers, falls and dies in a few seconds. Internal hemorrhage is the cause of death. At the post-mortem, the pericardium is found considerably distended by an enormous blood clot which has evidently produced the syncopal arrest of the heart. A bloody mass surrounds the base of the aortic trunk, and under it is discovered a transversal rupture of the primitive aorta, four or five centimeters long, just above its starting origin from the left ventricle.—(*Ibid.*)

FRACTURES OF THE BASE OF THE CRANIUM [*Major Veterinarian Berton*].—I. Thoroughbred mare of ten years, nervous and difficult to ride, drops suddenly on her hock as the saddle is put on her; she partly falls and knocks herself against a wall. She lays down motionless for a few moments, has some con-

tractions of the legs and dies. At the post-mortem some cutaneous excoriations are found over the left zygomatic process with wide ecchymotic spot in the cellular tissue under. The occipito-spheno-temporal hyatus is the seat of an hemorrhagic exudation extending to the ethmoidal volutes and the maxillary sinuses. The cranium is extensively injured. On the left basilar region there are two fractures, one on the spheno-temporal suture, involving the sphenoid and extending to the cribriform plate of the ethmoid, the other involving the sus-sphenoidal duct.

2. A thoroughbred, fifteen years old, pulls back on the halter and falls backwards. The fall is sudden and hard, the horse striking heavily on the pavement. The animal remains motionless, has clonic contractions especially on the forequarters, the palpebral reflex is gone, the pupils dilated, and blood is escaping freely from the nostrils. There is only a small cutaneous abrasion back of the orbit. The condition is so severe that the animal is killed. The autopsy revealed bloody extravasation under the cutaneous erosion, subperiosteal ecchymosis over the zygomatic process, some splinters of bone over the foramen laceration. After boiling of the skull, two fractures of the cranium are detected. One transversal complete, comminuted from the basilar process to the carotid notch and pterygoid process. The second comminuted also back of the posterior angle of the right foramen lacerum.

These two observations show that a fall on one side, a bruise of the temporal region, may be accompanied with accidents of very various severity, from the simple cerebral commotion to most extensive disorders of the cranium or of the brain.—(*Bull. de la Soc. Cent.*)

CARDIAC LESIONS IN A HORSE, WITH "ANTE-MORTEM" FIBRINOUS CLOTS [*Mr. A. Bel. Army Veterinarian.*].—This subject was twelve years old with uninteresting history. For several months his general condition was poor, he was unwilling to work, and had frequent swellings of the posterior extremities. Auscultation of the chest had revealed nothing except that the beatings of the heart sound more metallic and show a double noise at the second beating. These manifestations grew more severe until one morning he died suddenly.

Post-mortem: Abdominal cavity shows a serous, yellow, bloody exudate without inflammation of the peritoneum. Spleen, kidneys and liver about normal. Thoracic cavity shows emphy-

sematous lungs, no hepatization. Pericardium about normal. On the surface of the heart there are œdematous lesions along the cardiac vessels. The myocardium is soft, yellowish and easily torn. In the right cavity of the heart there is a well-marked *ante-mortem* clot, weighing 65 grammes, organized, hard, yellow on one face, red brown on the one which is exposed to the current of the blood. It is inserted in the bottom of the auricular cavities, passes through the auriculo-ventricular opening and extends to the lower part of the ventricle. It has some bands which secure it to the tricusped valve; one runs as far and into the pulmonary artery.

On the left side of the heart there is another clot with the same general characters. It is smaller, more conical, and ends into the aorta by a floating free point.

Transversal sections of these clots show the stratified disposition explaining the progressive development of the clots and the deposit of successive layers on their free surfaces. The endocardium of the two cavities was discolored. The endothelium of the large blood vessels and the valves were without rugosities or vegetations.—(*Journ. de Zootchnic.*)

THE HORSE STANDS PAT FOR CITY TRUCKING.—The Adams, American and United States Express Companies recently placed an aggregate order for one thousand horses with the Fiss, Doerr and Carroll Horse Company, of New York, averaging sixteen hands high and weighing about 1,200 pounds. And some people would have you believe the horse is “going out” for city trucking.

CORRECTIONS.—On pages 117 and 118 of the April issue the following errors occur in the report of the meeting of the Missouri Valley Veterinary Association at Kansas City: Thirty-three head, should read *thirty-two*: one gave incorrect readings, instead of three; hence the percentage of correct results by the subcutaneous method should read 97.77 instead of 93.47, while the percentage of incorrect readings should be changed from 6.52 to 2.22. The REVIEW published the above strictly according to copy, not knowing that the figures were not correct.

ARMY VETERINARY DEPARTMENT.

THE STATUS OF THE ARMY VETERINARY BILL.

The bill, H. R. 16843, was amended and favorably reported by the House Military Committee on April 26, and provides, briefly, as follows: For the appointment, by the President, of veterinarians and assistant veterinarians not to exceed two for each regiment of Cavalry and Field Artillery, fifteen as inspectors of horses and mules and as veterinarians in the Quartermaster's Department, and five as inspectors of meats for the Subsistence Department, not to exceed sixty-two in all. A candidate for assistant veterinarian must be a citizen between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and shall pass required examination. Such assistant veterinarian shall have rank, pay, and allowances of second lieutenant mounted; after five years of service be promoted to rank, pay, and allowances of first lieutenant, mounted: Provided, That he passes satisfactory examination for mounted service; or, if found deficient, he shall be discharged from the Army with one year's pay and have no further claim on the Government. Sec. 4 provides that the veterinarians of Cavalry and Field Artillery now in the Army, together with such of the veterinarians of the Quartermaster's and Subsistence Departments provided for in Sec. 1 of this act, now employed, who at the date of the approval of this act shall have less than five years of service, be reappointed and commissioned as assistant veterinarians with rank, pay, and allowances of second lieutenant, mounted; veterinarians who have over five years of service be reappointed and commissioned as veterinarians with rank, pay, and allowances of first lieutenant, mounted: Provided, That they pass a prescribed practical professional examination and a physical examination as to fitness for mounted field service: Provided further, That veterinarians now in the Army, and in the employ of the Quartermaster and the Subsistence Departments who fail to pass the prescribed physical examination, due to disability incident to the service, and who have been incapacitated from rendering satisfactory service to the Government, shall be retired from active service

with seventy-five per centum of the pay corresponding to length of service as prescribed herein. The bill also provides for reserve veterinarians, who shall have pay and allowances of second lieutenant, mounted, during period of service and no longer. Candidates for assistant veterinarian are to pass the examinations as appointed in order of merit, to vacancies as they occur, such appointment to be a probationary one of six months, after which time, if the services of the probationer have been satisfactory, he shall be permanently appointed, with commission antedated to embrace such probationary service. Probationary veterinarians whose services are found unsatisfactory shall be discharged at any time during the probationary period or at the end thereof, without further claim against the Government.

The House Committee on Military Affairs, in reporting the bill to the Committee of the Whole House, says: Your committee, after giving this bill very careful consideration, is of the opinion that it should pass in the interest of the efficiency of the service.

On March 23, 1912, there were employed in the Army 69 veterinarians. The substitute bill provides for 62. The present cost of this service is \$141,174.90. The cost under the proposed substitute bill will be \$172,551.16, a difference of \$31,376.26 per annum. All this bill does is to give rank to the veterinarians, which they do not now have, which is in line with the practice of other countries.

It is thought that it will greatly improve the service to give the rank provided in this bill, and in that way much money will be saved by virtue of increased efficiency in this service. The veterinary surgeons of this country are a body of highly trained and intelligent men who have made and are making great strides toward progress in their profession, and it is not reasonable to expect that the government can secure the best talent of the profession unless some fitting and substantial recognition is given to it.

The principal changes effected in the amended bill are the omission of the position of the chief veterinarian, of the purchasing officer of veterinary supplies and of the veterinarians with the rank of captain, as recommended in the original bill. The Military Committee of the House made these reductions in ranks to meet the objections of the War Department. As a consequence, if this bill becomes a law, the army veterinarians will not constitute a corps proper; again a victory for the War

Department, which has since long objected to the formation of a veterinary corps. However, the number of veterinarians has been increased from forty-two to sixty-two by the consolidation of all those serving in the line, in the Subsistence and Quartermaster's Department, and as all these veterinarians will be, in the future, officers of the Army, a united body of some strength will at least be created, who's better unity, self-reliance and influence should lead to a greatly increased efficiency of the Army veterinary service. There can be no doubt that this first and loosely constituted veterinary body is the forerunner of a properly organized Army veterinary corps in our Army.

In order to have this bill become a law, it is now imperative that the hands of Chairman Hoskins be strengthened for his work in the Senate, where he seems to fear a greater opposition than he found in the House. This bill *must* become a law at this session, or an enormous amount of energy will have been wasted and large expenditures been made in vain. Furthermore, it may be possible for Dr. Hoskins to save, by compromise in the conference committee, some of the omitted positions as originally recommended.

It is to be regretted that the favorable and liberal report of the Committee on Military Affairs of the House is spoiled by the very faulty reports on the organization and ranks of the European army veterinary corps embodied therein, which, in a large measure, were accepted as models by our Congressmen. These reports were evidently furnished to the Congressional committee by the War Department. They are from ten to twenty years behind the times, and so poorly translated and pregnant with mistakes as to give an entirely erroneous impression. If the War Department, instead of relying on the reporters and translators of the general staff, would have accepted the similar reports as made in the brief to our bill, which are up to date and correct in every respect, perhaps some of the old prejudices against veterinary matters in our Army might not have come again to the surface during the recent Congressional consideration of our bill. This phase alone shows how little our military authorities are interested in veterinary questions, for it is well known that they are thoroughly posted on all other matters of foreign army organization and improvement. Evidently, then, the War Department needs a chief veterinarian as much as it needs any of the other chiefs of bureau, because they are naturally interested and keep themselves well informed on all im-

provements at home and abroad, and can always furnish correct and timely information when needed. But the mere idea of a chief veterinarian seems to remain abnoxious to the powers that be in this department of the U. S. Government. O. S.

THE RECAST, MODIFIED FORM OF THE ARMY VETERINARY BILL FAVORED BY THE MILITARY COMMITTEE OF THE HOUSE OF REPRESENTATIVES.

We present below a reprint of the recast, modified form of the Army Veterinary Bill (H. R. 16843), which is favored by the Military Committee of the House of Representatives. Much legislation is in the nature of a compromise, and the bill here printed is the one which is not only favored by the Military Committee, but also by the Quartermaster General of the army, who approves of the measure in its new form. This is important, as the understanding is that all veterinarians of the army will be attached to the Quartermaster's Department. It is too early to make too definite statements based upon legislation which is still in the making and which has not reached finality. This bill may be further modified and, we hope, improved by restoring certain parts of the original bill, before the measure reaches the President's hands for approval—that is, in the Senate committees, on the floor of the Senate, or in the conference between representatives of the Senate and House. Nevertheless, some of the main features of the recast may be pointed out:

1. No chief veterinarian is provided for.
2. Rank and commission of first lieutenant is given, but no captaincies.
3. No specific mention is made of the various offices mentioned in Section I of the original bill—veterinarians as instructors in remount depots, as purchasing officer of veterinary supplies—except the number for each part of the service where veterinarians will do duty, with the regiments, in the Quartermaster's Department, in the Subsistence Department.
4. Fifteen veterinarians are provided for the Quartermaster's Department. A total of 62 veterinarians is called for as against 55 in the original bill.
5. Five years is required in the grade of second lieutenant as against three in the original bill.

6. The passing of a physical examination before promotion, reappointment, or being commissioned, is called for in the recast.

7. Reserve veterinarians in the new bill are not given rank, and pay for only such time as they are in the service of the Government.

8. The method of securing veterinarians to fill vacancies which may occur among the sixty-two veterinarians with rank and commission is made more strict. For the first six months appointees are probationary veterinarians who may be dropped during that period or at its close for unfitness or unsatisfactoriness.

A BILL [H. R. 16843]

To consolidate the veterinary service, United States Army, and to increase its efficiency.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, [That the President is hereby authorized, by and with the advice and consent of the Senate, to appoint veterinarians and assistant veterinarians in the Army, not to exceed two such officers for each regiment of Cavalry and Field Artillery, three as inspectors of horses for the remount depots, one as purchasing officer of veterinary supplies, five as inspectors of meats for the Subsistence Department, three as veterinary examiners and instructors, and one to act as chief veterinarian, not to exceed fifty-five in all.

SEC. 2. That hereafter a candidate for appointment as assistant veterinarian must be a citizen of the United States, between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and that he shall not be appointed until he shall have passed a satisfactory examination as to character, physical condition, general education, and professional qualifications.

SEC. 3. That an assistant veterinarian appointed under section 2 of this Act shall have the rank, pay, and allowances of second lieutenant, mounted; that after three years of service an assistant veterinarian shall be promoted to the rank, pay, and allowances of first lieutenant, mounted: Provided, That he passes a satisfactory examination under such rules as the President may prescribe as to professional qualifications and adaptability for the mounted service; or found deficient, he shall be discharged from the Army with one year's pay and have no further claim on the Government; that after fifteen years of service an assistant veterinarian shall be promoted to veterinarian with the rank, pay, and allowances of captain, mounted. after having passed such physical and professional examination as the President may prescribe; and that from the veterinarians with the rank of captain one shall be selected to act as chief veterinarian for the period of four years, and while so serving he shall have the rank, pay, and allowances of major.

SEC. 4. That the veterinarians of Cavalry and Field Artillery, together with the veterinarians of the Subsistence Department, now in the Army, who at the date of the approval of this Act, shall have less than three years of service, be reappointed and commissioned as assistant veterinarians with the rank, pay, and allowances of second lieutenant, mounted; that the veterinarians who have over three years of service be reappointed and commissioned as assistant veterinarians with the rank, pay, and allowances of first lieutenant, mounted; Provided, That they pass a prescribed practical pro-

fessional examination and a physical examination as to fitness for mounted field service, or in the case of veterinarians of the Subsistence Department, if their services have been satisfactory to the Commissary General. That the veterinarians with fifteen years of service be reappointed and commissioned as veterinarians with the rank, pay, and allowances of captain, mounted: Provided, That they pass a prescribed practical professional examination and a physical examination as to fitness for mounted field service, and that they shall be entitled to credit for all honorable prior service in the Army as veterinarians or veterinary surgeons in determining their status: Provided further, That veterinarians now in the Army, who fail to pass the prescribed physical examination, due to disability incident to the service, shall be retired with the rank, pay, and allowances corresponding to length of service as prescribed herein.

SEC. 5. That the Secretary of War, upon the recommendation of the chief veterinarian, with the approval of the Quartermaster General, may appoint such number of reserve veterinarians as may be necessary to attend public animals pertaining to the Quartermaster's or other departments and corps, who shall have the pay and allowances of second lieutenant, mounted: Provided, That such reserve veterinarians be graduates of a recognized veterinary college or university, and have previously passed such moral, professional, and physical examination as may be deemed necessary by the Secretary of War for the proper performance of their duties in mounted field service.

SEC. 6. That the Secretary of War is authorized to appoint boards of examiners to conduct the examinations prescribed herein, one member of which shall be a field officer, one a surgeon, and two veterinarians.

SEC. 7. That all laws or parts of laws in conflict with the provisions of this Act be, and are hereby, repealed.】

That the President is hereby authorized, by and with the advice and consent of the Senate, to appoint veterinarians and assistant veterinarians in the Army, not to exceed two such officers for each regiment of Cavalry and Field Artillery, fifteen as inspectors of horses and mules and as veterinarians in the Quartermaster's Department, and five as inspectors of meats for the Subsistence Department, not to exceed sixty-two in all.

Sec. 2. That hereafter a candidate for appointment as assistant veterinarian must be a citizen of the United States between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and that he shall not be appointed until he shall have passed a satisfactory examination as to character, physical condition, general education, and professional qualifications.

Sec. 3. That an assistant veterinarian appointed under section two of this Act shall have the rank, pay, and allowances of second lieutenant, mounted; that after five years of service an assistant veterinarian shall be promoted to the rank, pay, and allowances of first lieutenant, mounted; Provided, That he passes a satisfactory examination under such rules as the President may prescribe as to professional qualifications and adaptability for the mounted service; or, if found deficient, he shall be discharged from the Army with one year's pay and have no further claim on the Government.

Sec. 4. That the veterinarians of Cavalry and Field Artillery now in the Army, together with such of the veterinarians of the Quartermaster's and Subsistence Departments provided for in section one of this Act, now employed, who at the date of the approval of this Act shall have less than five years of service, be reappointed and commissioned as assistant veterinarians with the rank, pay, and allowances of second lieutenant, mounted; that the veterinarians who have over five years of service be reappointed and com-

missioned as veterinarians with the rank, pay, and allowances of first lieutenant, mounted: *Provided, That they pass a prescribed practical professional examination and a physical examination as to fitness for mounted field service: Provided further, That veterinarians now in the Army, and in the employ of the Quartermaster's Department and the Subsistence Department, who fail to pass the prescribed physical examination, due to disability incident to the service, and who have been incapacitated from rendering satisfactory service to the Government, shall be retired from active service with seventy-five per centum of the pay corresponding to length of service as prescribed herein.*

Sec. 5. That the Secretary of War, upon recommendation of the Quartermaster General, may appoint, for such time as their services may be required, such number of reserve veterinarians as may be necessary to attend public animals pertaining to the Quartermaster's or other departments or corps, who shall have the pay and allowances of second lieutenant, mounted, during such period of service and no longer: Provided, That such reserve veterinarians be graduates of a recognized veterinary college or university and have previously passed such moral, professional, and physical examination as may be deemed necessary by the Secretary of War for the proper performance of their duties in mounted field service.

Sec. 6. That candidates passing the examinations as prescribed in section two of this Act shall be appointed, in the order of merit in which they passed such examinations, to vacancies as they occur, such appointment to be a probationary one of six months, after which time, if the services of the probationer have been satisfactory, he shall be permanently appointed, with commission antedated to embrace such probationary service. Probationary veterinarians whose services are found unsatisfactory shall be discharged at any time during the probationary period, or at the end thereof, without further claim against the Government.

Sec. 7. That the Secretary of War is authorized to appoint a board of examiners to conduct the examinations prescribed herein, one member of which shall be a field officer, one a surgeon, and two veterinarians.

Sec. 8. That all laws or parts of laws in conflict with the provisions of this Act be, and are hereby, repealed..

D. A. H.

DR. JAS. A. WAUGH, Pittsburgh, Pa., gave a course of lectures at the Cincinnati Veterinary College, and also a course at the Terre Haute Veterinary College the past winter.

POPULAR EDUCATION.—Through the medium of the Farmer's Institutes, 131,078 persons listened to addresses on agricultural topics during the past season in the State of New York.

NEW YORK STATE MEETING EARLIER.—New York State veterinarians are reminded of the unusually early dates of the New York State Veterinary Medical Society this year. It will be held in Utica July 30-31 and August 1.

CORRESPONDENCE.

To Readers of the AMERICAN VETERINARY REVIEW:

I wish to suggest to readers of the REVIEW, who may have it in mind to do some experimental work with our V. B. Vaccination against hog cholera (see AMERICAN VETERINARY REVIEW for November, 1910, and January, 1912), that you observe especially and record any reliable data concerning the duration of the immunity conferred upon very young pigs.

We would appreciate very much any information concerning your observations on this point.

Future experience may easily show it desirable as a routine procedure to reinforce the original immunity after an, as yet, unknown period. If found advisable, this could be done at a slight cost.

M. H. REYNOLDS,
University Farm, Saint Paul, Minn.

GOWANDA, N. Y., May 6, 1912.

Editors AMERICAN VETERINARY REVIEW, New York:

I noticed in the case reports in the May number a case of irregular parturient paresis in a cow. I had two similar cases in my practice in 1909, the first one being in April, the patient being a six-year-old Jersey due to calve in August. My first call was about 7 a. m., finding the animal with all the symptoms of milk fever, and would have diagnosed it as such but for the history. I gave half a grain strychnine sulphate hypodermically and left a prescription for nux, digitalis and gentian, to be given every two hours. Late that night, there being no improvement, I decided to inflate the udder. At 3 a. m. cow was up eating and apparently as well as ever. There was no recurrence.

To Case No. 2 I was called about 8 a. m., the owner informing me that he thought the cow had a bad sprain or broken limb. Finding no such trouble on examination, I concluded it a parallel of Case No. 1, and inflated the udder, also giving a stimulating treatment as before. This was in June, the cow having calved

in March. The next morning the owner called me up and informed me that the cow was up and all right. As I heard no more from this case, conclude there was no further trouble.

I can think of no reason why it should occur at this time, but know that the treatment for parturient paresis had a curative effect.

J. V. HILLS, D.V.M.

DR. DAVENPORT:

A good aggravated case of indigestion causes exactly the same symptoms as milk fever; *ptomaine* poisoning is *like milk* poisoning, the same treatment will save them; *always wait a reasonable time, and if they fail to get on their feet, chance giving a good dose of salts when down*, and try and maintain life and energy with aromatic spirits and small doses of strichnia, belladonna, and aconite, small doses also. I have had hundreds of such cases.

The trouble with veterinarians is, they are like other animals—lack good judgment. Learning is of no avail without the experience and judgment.

Yours truly,

A 1/2 HORSE AND COW DOCTOR.

HATTIESBURG, MISS., May 15, 1912.

Editors AMERICAN VETERINARY REVIEW, New York, N. Y.

Since publishing the report we sent you last month in this month's REVIEW of "An Unusual Case of Parturient Paresis," we have received quite an amusing letter from a party in Hempstead, N. Y. I am enclosing same for publication in the REVIEW for the benefit of those who may not be in possession of the "knowledge" of veterinary science and therapeutics which the party discloses in his letter to us.

He states that a good aggravated case of indigestion causes exactly the same symptoms as milk fever or "parturient paresis." We would like to have him state *what form of indigestion* he has reference to? If I am correct, there are several forms of indigestion, which depend largely on the *cause* for the animal's manifestation of *symptoms*. *Ptomaine poisoning* might cause

sometimes symptoms slightly similar to parturient paresis (or milk fever), but I will confess that I have not met with a case of ptomaine poisoning that would lead me to confuse it with a case of parturient paresis.

As to treatment, you may chance giving a good dose of salts to a cow, down and in an unconscious condition, as much as you like; but you will have to *show me* that you can do so successfully before you can induce me to try such folly.

I quite agree with you, brother, that learning is of little use to a practicing veterinarian without some experience and judgment, and experience and judgment are very liable to lead one astray without the learning. The three requisites go hand in hand. No two of them will bring you success and satisfaction without the others. Perhaps that is why you are a $\frac{1}{2}$ Horse and Cow Doctor.

Yours for the betterment and success of the profession,

EDGAR HEINY, V.M.D.

Veterinary Profession of America via AMERICAN VETERINARY
REVIEW:

The following "call to arms" by President Brenton, of the A. V. M. A., has been sent to every member of that organization and is reproduced here, that it may also reach veterinarians who are not members of the A. V. M. A., but who are equally interested with those that are, in the passage of the *Army Veterinary Bill*.

"DEAR DOCTOR:

This is a call to arms! We need the immediate and vigorous help of every last member of the A. V. M. A. in our fight before Congress for proper recognition. What can you do for us? Listen:

Our bill providing for veterinarians in the Army, with the rank and pay of commissioned officers, is now in the hands of the House and Senate Military Committees. The House committee is believed to be willing to report the bill out favorably, and when it does we already have 150 members of the House pledged to vote with us. The Senate committee is less interested, however, and at present the bill is in the hands of a sub-committee of three members, comprising Senator Bristow of Kansas, Senator Jones of Washington and Senator Clark of Arkansas.

Now there are three things which I most earnestly urge you to do if you love your profession and if you want it properly recognized by the United States Government:

1. Write at once a strong letter to either Senator Bristow, Senator Jones or Senator Clark, appealing to him to have his sub-committee report the bill favorably to the Military Committee in order that it can be gotten before the Senate itself.

2. Write also to one or both of the United State Senators from your State and ask them to do what they can to bring the bill out of committee and *to vote for it* when it comes up on the calendar.

3. Write finally to the Congressman from your district and urge him strenuously to support the bill when it is reported out of the committee and put to vote in the House of Representatives.

The chances for success this year are better than they ever were before, but in order to win WE'VE GOT TO WORK. We must wage a relentless battle from now on. Every last man of us in the association must get to work and do his utmost. Can I count on you personally to write these three letters? Please don't delay—write them at once. Now is the time to strike while the iron is hot, and everybody strike together!

Beseeching your assistance, which will lead to the betterment of our beloved profession, I am,

Very heartily yours,

S. BRENTON.

P. S.—For just such reasons as above, we need to constantly increase our membership. Do your best to induce every eligible brother to join us at Indianapolis."

S. B.

DR. CHARLES R. FAIRCHILD MEETS DEATH BY BEING STRUCK BY TRAIN.—Dr. Charles Radcliff Fairchild, D. V. M. (Cornell, 1910), was killed at Batavia, N. Y., where he was practicing, on February 29, 1912. Dr. Fairchild was driving across the tracks of the New York Central Railroad, when his carriage was struck by a train. The doctor was building up a successful practice in Batavia, and was well liked. He was in his 29th year when he met his death.

SOCIETY MEETINGS.

PHILIPPINE VETERINARY MEDICAL ASSOCIATION.

The fourth annual meeting of this association was held at the Young Men's Christian Association building, Manila, commencing at 9.50 a. m. on Friday, February 9, 1912.

The meeting was called to order by the president, Dr. Archibald R. Ward, who stated that as our special guests had other pressing engagements which would not permit their remaining throughout the entire meeting, it was advisable that the association be favored with their addresses first. Thereupon the president introduced Hon. Newton W. Gilbert, Vice-Governor of the Philippine Islands and Secretary of Public Instruction, who expressed his appreciation of the work that is being accomplished by the veterinarians, and of its importance, which is fundamental to the commercial and material development of the Philippines. Judge Gilbert laid particular stress upon the absolute necessity of popularizing the work of the veterinarians in the Archipelago, in order to encourage a certain number of qualified Filipinos to study veterinary medicine; also to encourage increasing cordiality between the veterinarians and the people with whom they come in contact. The secretary made special mention of the acquisition to the veterinary division of Dr. Victor Buenca-mino, who at his own expense took the initiative by acquiring a veterinary degree, which was very commendable.

In response to Judge Gilbert's excellent address, the Director of Agriculture, Mr. F. W. Taylor, who recently came to the islands, expressed himself as being agreeably surprised at the conditions in general in the islands and the Filipino people in particular, and laid special emphasis upon the importance of co-operation between the veterinarians and the Filipinos, in order to accomplish the desired result of eradicating communicable animal diseases in the Philippine Islands. Mr. Taylor enumerated some of the difficulties that will be encountered in obtaining the necessary appropriations for the Bureau of Agriculture, but assured the veterinarians that he would do all that is possible to assist them in carrying on the campaign, as outlined, against the many diseases that affect the domestic animals of the Archi-

pelago. This was the first opportunity that Mr. Taylor had of appearing before the association, and on account of his optimistic statements he made a very favorable impression on all the members present.

As the minutes of the last meeting were published in the May number of the *Philippine Agricultural Review* and were read by the majority, if not all, of the members, it was decided to dispense with the reading of the minutes and to proceed with the regular order of business.

Dr. George S. Baker, of the Federal service of the United States, who recently came to the islands for the purpose of establishing a meat inspection and quarantine system for the Archipelago, delivered an interesting address on the main features of meat inspection in the States. Dr. Baker spoke in a very optimistic vein regarding the ultimate success in the elimination of animal diseases in the islands.

Dr. H. H. Ladson gave an extemporaneous and detailed report upon the field methods in combating rinderpest in the provinces, in lieu of a paper on the subject. Dr. Ladson's talk resulted in a lively discussion and explanation of many hitherto misunderstood points in the methods that are practiced in dealing with rinderpest in the provinces.

Dr. W. H. Boynton, Pathologist, Bureau of Agriculture, gave an interesting and instructive discourse on an atypical case of rinderpest, illustrating his lecture by means of blackboard diagrams showing in detail the various phases of the disease. This case is probably the first one of its kind ever reported, and the details of it will no doubt be made the subject of a special bulletin.

Dr. D. B. Palmer read an interesting paper on hemorrhagic septicaemia, citing an outbreak that occurred in the municipality of Argao, Cebu province. Dr. Palmer's paper was well received.

A joint paper by Drs. A. R. Ward and F. W. Wood on the transmission of rinderpest was read in a clear and comprehensive manner by the former, and is a very scientific and splendidly written article, based upon observations that were made in an experimental way at the Alabang (Rizal) Stock Farm. The authors intimated that they would publish the article in full in a special bulletin, and anyone interested should obtain a copy and read it in detail, in order to fully appreciate it.

The election of officers took place and resulted as follows: President, Dr. Joseph Jefferes, Veterinarian, Seventh Cavalry,

U. S. Army; Vice-President, Dr. Frank C. Gearhart, Chief of the Division of Animal Husbandry, Bureau of Agriculture; Secretary-Treasurer, Dr. Alvin Broerman, Instructor in Anatomy, College of Veterinary Science, University of the Philippines.

The members of the association present were: Drs. A. R. Ward, Joseph Jefferes, W. P. Hill, A. H. Stancliffe, W. H. Boynton, F. W. Wood, J. L. Gross, Victor Buencamino, G. S. Baker, W. J. Palmer, H. E. Trawver, Chas. H. Decker, A. D. Miller, W. K. Howard, Ray C. Porter, W. A. Kliphardt, C. C. Middleton, D. B. Palmer, James Hill, H. H. Ladson, J. R. Burns, A. H. Julien, Alvin Broerman, T. T. Hartman, and D. C. Kretzer.

It was unanimously decided to give a banquet at the Hotel de Francia at 7.30 o'clock Friday evening, February 9, 1912. There being no further business to come before the association, the meeting adjourned to convene at the call of the president.

The banquet was held as arranged, and was attended by about twenty-five veterinarians and the majority of the technical force of the Bureau of Agriculture. After an enjoyable dinner the following speakers were introduced in a few appropriate and well-chosen words by the toastmaster, Dr. W. P. Hill, Veterinarian, First Field Artillery, U. S. Army.

The first speaker was Mr. F. W. Taylor, Director of Agriculture, who spoke at some length in a more or less humorous vein, but incidentally referred to the benefits that result from bringing together, under the circumstances, of the personnel of the bureau, and intimated that he was in favor of such affairs annually, if not semi-annually, for the mutual exchange of scientific ideas.

The second speaker was Dr. Archibald R. Ward, president of the association, and Chief Veterinarian, Bureau of Agriculture, who stated that a winning fight is being made against rinderpest, and that the number of infected municipalities at the end of the last fiscal year (June 30, 1911, has been reduced from eighty to twenty-eight at the present time, and that now no case of the disease is known to exist in the Archipelago outside the Island of Luzon.

Dr. Ward read a letter, "A Sure Cure for the Grouch," from Dr. P. H. Burnett, one of the members of the association who is on special detail at Pnom-Penh, Cambodia, Indo-China. The author of these lines has "done time" in Indo-China, and can

sympathize with Dr. Burnett, who has probably come to the conclusion that the Philippines are not so bad a place in which to live as some people think.

Dr. George S. Baker, of the Federal service of the United States, was the next speaker. He stated that he has formed more favorable and very different impressions of the Philippine Islands than from what he had been led to believe in the States. Dr. Baker stated that he believed that the key to the successful elimination of communicable animal diseases in the islands lies in more rigid restrictions at the ports of entry. Dr. Baker has come to the Philippine Islands to remain one year, for the purpose of perfecting a meat inspection and quarantine system, and has entered actively into work.

The last speakers were Dr. Joseph Jefferes, Dr. A. H. Stancliffe and Dr. W. P. Hill, in the order given. These gentlemen are military veterinarians, and all made a plea that each and every member of the association give their cause a boost, and our good will and support, to obtain the desired legislation for the Military Veterinary Bill.

After carefully reading a draft of their proposed bill, it certainly appears that the army veterinarians have been very modest, indeed, in their request, and are entitled to all the encouragement and assistance that we as colleagues can give. The army veterinarians have our sympathy, and it is sincerely hoped that they will be successful in securing the legislation which they so ardently desire.

Regrets to attend the banquet were received from his Excellency, W. Cameron Forbes, Governor-General of the Philippine Islands; Major General J. Franklin Bell, U. S. Army, Commanding the Division of the Philippines; Honorable Newtown W. Gilbert, Vice-Governor, and Secretary of Public Instruction; Professor C. M. Conner, Assistant Director of Agriculture; and Mr. H. T. Edwards, Assistant to the Director of Agriculture.

The retiring officers desire to take this opportunity of expressing their appreciation to each and every member of the association for his hearty co-operation, and feel under the deepest obligations to Hon. Newton W. Gilbert, Secretary of Public Instruction, and to Mr. F. W. Taylor, Director of Agriculture, who made the meeting possible, and who contributed so largely to its success.

DAVID C. KRETZER, Secretary-Treasurer.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of the above association was called to order by President Berns in the lecture room of the New York-American Veterinary College at 8:45 p. m.

The minutes of the April meeting were read and approved.

Dr. C. S. Chase, of Bayshore, L. I., was then introduced, and read an interesting and instructive paper on "Hog Cholera."

In this paper the doctor went quite deeply into details as to cause, treatment and results, having had quite some interesting personal experience with this scourge of swine. Also explained the preparation of the serum which is used to combat this disease.

The doctor stated that he had used the serum, but not always with satisfactory results.

In one herd of twenty-seven head which were inoculated during the early stage of the outbreak, eight recovered. In another herd of seventy-five, in which the injections were made rather late, twelve were saved. He stated to get good results, the serum must be used in the early stage of the disease, and rigid measures taken to prevent the spread of infection.

The final loss to hog raisers in the United States alone in 1908 was \$40,000,000. In New York State in 1910 the loss was \$66,800.

Dr. Chase also exhibited several beautifully mounted pathological specimens.

Dr. P. K. Nichols, of Staten Island, led in the discussion, and stated that at Sailors Snug Harbor, where a herd of swine are kept, five miles from any other herd, an outbreak occurred, and the only explanation of the source of infection was that it must have come from a railroad passing near the place, which transported hogs and other live stock. It was thought that some of the litter from the hog cars had carried the infection.

Dr. Weaver, of Glen Cove, L. I., stated that the disease is known as true hog cholera, swine plague and contagious pneumonia. The presence of the filtrable virus is the true diagnostic agent. Reported good results where the intestinal symptoms were present, but when the pneumonic symptoms and conditions were present it had little effect.

Dr. Berns asked Dr. Chase as to the means taken to disenfect the hogs and hog pens. The doctor stated that the hogs were dipped in hot creolin solution, thoroughly scrubbed, and

removed to clean new quarters. Freezing destroys the germ of this disease, and when the yards and pens can be exposed to frost, it proves a good method of eradicating the trouble.

Drs. Mangan, Clayton, Cochran and others also discussed this very interesting subject.

Dr. Clayton then placed on exhibition a large skin slough which he explained had followed the use of the preparation known as antiperostin which is used and recommended for the removal of bony growths, but which the doctor claims has removed none for him.

This report led to a general discussion of this class of agents in which a majority of the members took part.

Dr. Clayton in answer to a query, said that he doubted if firing was productive of any beneficial results.

Dr. Weaver asked if any one had used the magnesia sulphate treatment in tetanus, and stated that he had a very bad case recover which was treated in this way. Dr. Berns remarked that one case in which they had used this remedy showed marked improvement, but after ten days suddenly died.

Dr. Clayton mentioned the use of Chlorotone and sweet oil as a useful agent in tetanus.

Dr. Berns cited a case of a dog having a tumor, in which case Chlorotone was administered in the ratio of three grains to the pound of body weight. After three hours the dog was completely under the influence of the drug and the tumor was removed. The animal continued to sleep for twenty-four hours, but after thirty-six hours got up, staggered around and at the end of forty-eight hours appeared to be normal.

Dr. Mangan asked if so called chloroform pneumonia is a true pneumonia, showing the different stages of regular pneumonia. It seemed to be the consensus of opinion that such is not the case.

Dr. A. Schlesinger reported that a guinea pig inoculated with tubercular material from the dog on which he read a paper at the April meeting, and exhibited specimens of the same, had developed nodules in the groin, and cultures from these are now being grown on egg media.

Dr. Clayton brought up the subject of an easy and cleanly way of administering a cathartic to a cat. It was suggested that the flexible castor oil capsule be used, or still better a chocolate coated preparation of pheno-thalin.

Dr. Ellis cited a case of a dog having swallowed a solid

rubber ball, retaining the same for quite a period of time, and finally after the doctor had about exhausted his resources, was evacuated, but instead of being spherical was somewhat crescent shaped. The doctor also mentioned an interesting case of tape worm in a dog, in which case the owner, a deaf mute lady, was the diagnostician. The worm was successfully removed in its entirety in two hours.

A discussion of trocar abscesses was then taken part in by a number of the members and visitors present. It was the consensus of opinion that the infection causing the abscess is due to faecal matter lodging in the tissues as the instrument is withdrawn. It was suggested that a 3 per cent. carbolic solution be injected through the canula into the bowel before removing the same. Creolin solution is also used, for the same purpose, with good results.

Dr. Berns extended an invitation to the association to hold the June meeting in the Berns Veterinary Hospital in Brooklyn.

On motion regularly made, seconded and unanimously carried, it was decided to accept Dr. Berns' invitation, and hold the June meeting in Brooklyn. It is expected that several operations will be performed, and Dr. D. J. Mangan will read a paper on an interesting subject.

Meeting adjourned.

R. S. MACKELLAR,
Secretary.

WISCONSIN STATE VETERINARY SOCIETY.

The above society met at the Republican House in Milwaukee on February 20 and 21. Though the meeting was not a large one in the point of the number of veterinarians assembled, it was one of the most enthusiastic and interesting meetings of its kind. The general session in the convention room of the Republican House was presided over by Dr. J. S. Atkinson, vice-president, in the absence of President Dr. H. P. Clute. Dr. M. P. Ravenel delivered the first address. His theme was the work of the Anti-Tuberculosis Association and its relation to the veterinary profession. He urged more active co-operation of the practicing veterinarians with this association and outlined the efforts to check the ravages of the "Great White Plague" in America. This address was one of the most helpful of the session and won for the doctor and for the cause he represented many new friends.

Other speakers were: Durant C. Gile, Milwaukee, on "Bovine Tuberculosis in Wisconsin"; Dr. O. H. Eliason, State Veterinarian, Dr. J. T. Hermshein, Pleasant Prairie, "Interstate Shipment of Cattle"; Dr. A. H. Hartwig, Watertown. "Power of the University—How it Affects the Farmer, the Veterinarian and the Public"; Dr. Charles Schmitt, "Equine Intestinal Parasites." Wednesday morning clinics were held at the Milwaukee Veterinary Hospital; several very interesting operations were performed. Tuesday evening the banquet was held at the Republican House, where the veterinarians, after regaling themselves upon the tasty viands set before them, entered upon an informal discussion of matters pertaining to the veterinary profession. Dr. Hermshein was master of the ceremonies, and those who know the genial doctor may be assured that the ceremonies were carried out in a manner to suit the occasion to the dot. It was not until after midnight that the banqueters left the hall, firmly resolved to be present at the next meeting of the society, which was scheduled for August at Watertown.

The following resolutions were unanimously passed at the regular session:

"Whereas, The United States Live Stock Sanitary Association at its Chicago meeting December 5 and 6, last, adopted the following resolution, Resolved, That this association place itself on record as discountenancing the action of any State Board which shall employ or empower any one to apply this (tuberculin) test officially who is not a thoroughly competent and qualified veterinarian, and

"Whereas, This resolution must apply to the Wisconsin Live Stock Sanitary Board, as Wisconsin is the only state where such practice is adopted, and

"Whereas, Under this loose method of testing cattle 22.52 per cent. of error resulted in the useless slaughter of thousands of dollars' worth of healthy cattle from July 1, 1910, to July 1, 1911, and

"Whereas, The administration from July 1, 1911, to November 1, 1911, discontinued allowing other than qualified veterinarians to apply the test, thereby reducing the error to 2.7 per cent., in spite of which the State Live Stock Sanitary Board on December 2, 1911, reverted to the erroneous tests by the laity, Therefore, be it

"Resolved, By the Wisconsin State Veterinary Society, in

convention assembled in Milwaukee this 20th day of February, 1912, that we, the representatives of the veterinary profession of Wisconsin, disapprove of the action of the Wisconsin Live Stock Sanitary Board, and pledge our allegiance to the United States Live Stock Sanitary Association in its efforts to check the increase of tuberculosis, and further pledge our support of any measure looking to the adoption of practices in Wisconsin which shall harmonize with the views of the United States Live Stock Sanitary Association."

The following officers were elected: President, Dr. H. P. Clute, Milwaukee; vice-president, Dr. J. S. Atkinson, Marinette; secretary, Dr. W. W. Arzberger, Watertown; treasurer, Dr. J. Hermshein, Pleasant Prairie; trustee, Charles Schmitt, Dodgeville.

W. W. ARZBERGER,
Secretary.

ADVANTAGES OF HYPODERMIC ANESTHESIA.

Lanphear, in the *International Journal of Surgery*, enumerates these as follows:

ABSENCE OF NAUSEA.—After operation there is absence of nausea and vomiting—a most important thing, especially in abdominal surgery.

ABOLITION OF PAIN.—Post-operative pain is conspicuous by its absence. Patients often pass a most comfortable night instead of suffering intensely and sometimes sleep much of the first twenty-four hours succeeding operation, awakening next morning with a demand for food.

EARLY FEEDING.—The desire for food may usually be gratified (except, of course, in operation on the stomach and other special work where peristalsis is objectionable), as the secretions are not checked enough to interfere with digestion. This is of great import, particularly when the patient has become weakened before operation and when there has been unusual loss of blood.

PREVENTION OF SHOCK.—When this form of anesthesia is used, shock is absent unless there is excessive hemorrhage or unless too much ether or chloroform is used. Much of what has been called “shock” in the past was the result of an excessive amount of chloroform and, in less degree, ether.

FREEDOM FROM FEAR.—A most prominent advantage of this form of anesthesia is the absence of fear or dread of the operation room.

NO ANESTHETIST ESSENTIAL.—A most decided advantage of this form of anesthesia, and especially of true hyoscine-morphine-cactin (H-M-C, Abbott), supplemented by a local anesthetic (Abbott's Anesthaine preferred) when needed, is that a surgeon may perform many operations without the assistance of another doctor. The importance of this in country practice can hardly be overestimated. Curettage of the uterus, repair of cervix, repair of perineum, forceps delivery, operation for strangulated hernia, for appendicitis, reduction of fractures, etc., may be done with this agent, plus a local anesthetic.

ECONOMY.—To hospitals, and to many doctors, the cost of ether or even of chloroform is something of more than passing interest. In hospitals, where many operations are performed, the use of even one tablet an hour or so before the patient is taken to the operation room will reduce the anesthetic bill of the institution one-half or more.

LESSENING LABOR.—To the nurse this form of anesthesia is a God-send. The relief is not only physical, but mental; no anxiety about post-operative pain, vomiting, restlessness, fear and thirst of the patient—all this means much to the conscientious hospital nurse; and the patient who has had both forms of anesthesia can never again be induced to submit to chloroform or ether.

NO INTERFERENCE WITH PERISTALSIS.—There is but little, if any, interference with bowel movement. An enema in twenty-four hours usually suffices and even that may not be necessary, for not infrequently there is natural evacuation within the first day, unaided.

LONG ANESTHESIA.—The analgesia continues for many hours. This is of distinct advantage in prolonged, tedious operations. To know that the patient is not being carried to the brink of the grave by too much chloroform or ether is an immeasurable comfort to the operator who has to use a long time in his work.

NEWS AND ITEMS.

MEAT INSPECTION INVESTIGATION.

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry at Washington, who is at the head of the Government meat inspection service, states that the Bureau has nothing to fear from a fair and thorough investigation of the inspection.

"The resolution introduced in Congress by Representative Nelson," says Dr. Melvin, "contains a number of false assumptions based on ignorance or misrepresentation of the facts. It appears that the charges are inspired by professional agitators, aided by disgruntled and discredited ex-employees who have been dismissed from the service. Most of these charges were made two and a half years ago by Mrs. Caroline Bartlett Crane before the American Public Health Association, and she was unable to sustain them to the satisfaction of the executive committee of that association. The charges are also partly based on statements made by Dr. Albert Leffingwell in a book on 'American Meat,' published by him in England in 1910, a book abounding in misrepresentations and distorted quotations from official publications.

"Aside from the attack on the integrity of the officials administering the service, the main question at issue is simply whether the inspection should be based on principles determined by eminent scientists the world over who have thoroughly studied the subject, or on the sentimental notions of faddists. In 1907 the regulations were carefully gone over by a commission of distinguished scientific experts outside of the Department of Agriculture, who reported that 'if there be any general error in the regulation this is in favor of the public rather than in favor of the butchers and packers.' The present regulations conform to the views of that commission except that they are even more strict in some respects than the commission thought necessary.

"Perhaps the most striking evidence that the meat inspection has not deteriorated is the fact that percentage of condem-

nations under the new law have been more than fifty per cent. greater than under the old law. It is evident from the statements so far made by Mrs. Crane before the committee that she does not understand many things about the inspection system and the regulations, and anything that she does not understand she suspects of being crooked. She has gone out of her way to place a sinister construction upon perfectly innocent things. So far she has advanced nothing that cannot be made perfectly plain by the Bureau when the time comes to present its side of the case.

"The so-called secret instructions to Bureau employees were issued as a confidential publication only during 1907 and 1908. For three and a half years these announcements have been furnished not only to the packers but to State officials, stockmen and the press. The object of issuing confidential instructions during the period that these announcements were regarded as confidential was not to nullify the law and regulations in the interests of the packers, but rather to keep the packers from knowing of the steps that were being taken to maintain surveillance over their operations.

MEAT INSPECTION AND TUBERCULOSIS.

The Government meat inspection service has been criticised for passing for food purposes the meat of animals that are slightly affected with localized tuberculosis. It is sometimes charged that diseased meat is passed for food.

"The only foundation for such statements," says Dr. Melvin, Chief of the Bureau of Animal Industry, "is that the healthy and wholesome meat of an animal affected slightly and locally with some disease is passed, after the affected portion has been removed and condemned. The meat or flesh may not be affected in any particular, the disease being usually confined to certain glands or organs. The diseased portion is condemned; only the healthy portion is passed for food.

"This procedure is justified and sustained by the highest scientific authorities not only in the United States but in all countries having an efficient meat inspection. Objections to it usually come from those who have not made a study of comparative pathology and who are not qualified to pass upon the questions involved, and sometimes they come from those who op-

pose the use of meat at all as food and who wish to discredit it in every possible way."

Dr. Melvin continues :

"The idea of eating the meat of a slightly diseased animal may be repulsive to some, but a little consideration should readily convince a reasonable person that there is no valid reason for condemning and wasting perfectly wholesome meat simply because there happens to be somewhere in the animal a gland or an organ showing a lesion, or a parasitic nodule, or some slight, local condition which does not extend to or affect in any way the remainder of the carcass. The argument that all the meat of an animal affected to even the slightest degree with any disease should be totally and utterly condemned, if carried to the extreme and to its logical end, would result in the condemnation of practically every animal slaughtered and the abolition of meat as food.

"With the increasing cost of the necessities of life it becomes more important that wholesome food should not be recklessly and needlessly destroyed, and it is the duty of this Department not only to protect the people against unwholesome meat, but to conserve the food supply. The only sensible course in meat inspection is to determine at just what stage a disease or abnormal condition becomes noxious, and where to draw the line between what should be condemned and what should be passed, always giving to the consumer the benefit of any doubt."

As showing that the Department does properly safeguard the consumer, Dr. Melvin refers to the report of a commission of eminent scientists outside the Department of Agriculture who were appointed in 1907 to consider and make recommendations with regard to certain features of the meat inspection, and who said on this point :

"The commission would invite attention to a very widespread misconception as to the significance of the word 'diseased' in connection with meat inspection. To the popular mind the idea of eating 'diseased' animals is abhorrent. From the standpoint of meat inspection, however, the term 'diseased' must be used in a sense not entirely in harmony with the popular conception of this word.

"The commission could easily undertake to show that not any single animal used for food in any part of the world would, upon microscopic study, be shown to be absolutely free from all infection or lesion if said animal were presented to it for ex-

amination. * * * There may be a strictly localized tuberculosis, consisting, for instance, of an isolated tuberculous nodule in the lungs, in the liver, or in some other portion of the body. Such nodule would make the particular point infected 'diseased' from the standpoint of meat inspection; in the opinion of some members of the laity, such nodule would also make the entire meat of the animal 'diseased' and call for the condemnation of the entire carcass; from the standpoint of meat inspection, the carcass in general would not be 'diseased,' and there would be no justification in condemning it.

"The veterinary inspector, in judging whether a carcass is 'diseased,' must do so upon the general principles of pathology in its relation to the public health, and not upon any preconceived, exaggerated or sentimental idea.

"The commission would suggest that the co-operation of the public is most valuable in aiding in the suppression of frauds in the meat trade, but that it would be well for the public to have confidence in the ability of the veterinary inspectors to pass judgment upon the purely technical side of the questions involved, since such judgment can be of value only when expressed by persons especially trained for this purpose.

"Illustrative of the precautions taken by the Department of Agriculture to safeguard the public health, it is the opinion of the commission that the Bureau of Animal Industry, acting under the existing regulations, would necessarily condemn certain meats which would be allowed, either with or without restrictions, according to circumstances, upon the markets of Germany, France, England, and other countries."

Dr. Melvin states that under the Federal inspection it is only when the disease is slight and localized or circumscribed that the unaffected portions of the carcass are passed for food. Whenever the disease is generalized or disseminated throughout the system, or is of such character or extent as to affect the wholesomeness of the meat, the entire carcass is condemned—and the consumer is given the benefit of every doubt. Careful experiments carried out by the Bureau and by scientists elsewhere have shown that the germs of tuberculosis are not carried in the blood circulation and distributed throughout the system until the disease has reached a very advanced stage. It is, therefore, considered perfectly safe, when the infection is clearly limited to a certain gland or group of glands or an organ, to remove these parts and pass the healthy parts which have not become affected in any way by the disease.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Week Aug. 26, '12	Indianapolis..	C. J. Marshall, Philadelphia
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médéciale Veterinaire Fran- caise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha ..	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	June, 1912.....	Ft. Collins....	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21-22, 1911.	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	Oct. 10-12, 1911..	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	July, 1912... ..	Springfield ...	L. A. Merillat, Chicago.
Indiana Veterinary Association...	Jan. 15-16, 1913..	Indianapolis ..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	.....	.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n... ..	January, 1913...	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.....	July, 1912.....	Portland.....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young's Bost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n.....	July 10-11, 1912.	Minneapolis...	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n .....	.....	.....	D. L. Luckey,
Montana State V. M. A.....	Jan. 29-30, 1912.	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912...	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	Jy. 30-31, Aug. 1.	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 1912	Raleigh.....	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	Fargo.....	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A....	Feb. and Nov...	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	September, 1912.	.....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'n	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	June 19, 1912...	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn....	.....	Philadelphia..	B. T. Woodward, Wash'n, D. C
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo .	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n .....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514-9th St., N. W.....	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	M. Page Smith, Wash., D. C
Vet. Med. Ass'n of N. J.....	July, 1912.....	Jersey City...	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	E. L. Loblein, New Brunswick.
Veterinary Practitioners' Club...	Monthly.....	Jersey City ...	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n	July 11, 1912....	Newport News	A. F. Mount, Jersey City.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	Geo. F. Saville, Norfolk.
Washington State V. M. A.....	Jan. 9-10, 1913...	Wenatchee....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Carl Cozier, Bellingham
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville....	Benjamin Gunner, Sewickley.
York Co. (Pa.) V. M. A.....	June 4, 1912.....	York.....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

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VETERINARIANS do not appreciate how much a typewriter does towards increasing their prestige and *clientèle*, until they have one. Letters to clients describing the conditions in a case visited, seem so much more business-like to the business man when typewritten than when written with a pen. And in writing articles for publication they are indispensable. A machine that is easy to learn to operate and has no complicated parts to get out of order, is the whole secret in selecting a typewriter. Such a machine is the "Blickensderfer." We know whereof we speak, as there have been two or three of them constantly in use in the REVIEW office for the past fifteen years. See address on page 13 (adv. dept.), and write for particulars, mentioning the REVIEW.

AMERICAN VETERINARY REVIEW.

JULY, 1912.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, May 15, 1912.

CONGRESS OF TUBERCULOSIS.—The Seventh International Congress of Tuberculosis has just closed its labors. Opened on the 24th of April, it lasted up to the 20th of May, and as its predecessors, has proved a grand success. The work has been divided into four sections, that of medicine, of surgery, of social protection and of etiology and epidemiology. As it is in that section that papers and communications connected with veterinary medicine were principally presented and discussed, I may offer to our readers, as a text of actuality, the résumé of a few among the most important.

I. HUMAN AND BOVINE TUBERCULOSIS, by Prof. H. Vallée, the Director of Alfort.

The researches of the last few years have clearly established the fact that whether isolated from the organism of man or that of bovine, the bacillus of Koch may be distinguished into two types, the human and the bovine.

The differentiation is made particularly sure by the following: Cultures on media, glycerinated or not, inoculations to rabbit and cattle. However, alongside the bacillar forms thus clearly differentiated, some examples of difficult or uncertain classification may be found.

The distinctions, established in that manner, do not allow us

to consider the bacilli of man and of bovines as two distinct species. All the facts accumulated in bacteriology demonstrate the extreme variability of microbial species, and it can be taken into consideration that, according to the conditions of life imposed by the hazards of contagion, the tuberculous bacillus adapts itself more particularly to such organism where it requires all its well characterized specific qualities.

The bacteriological identification of the samples of bacilli isolated from man gives precise notion of the unicity of the species of the bacillus of Koch. Statistics show, if the perfect value of the modes of bacillar identification are admitted, that about 10% of the cases of human tuberculosis proceed from an infection by bovine bacillus. It can also be asked if such bacillus taken from a patient and which possessed all the characters of the human bacillus was not itself, at the beginning of the infection, of bovine type. Numerous experiments show, in fact, the possibility of giving to the bacillus of Koch peculiar pathogenous qualities.

Finally, it would be also proper to take in consideration, in the appreciation of the possibilities of the transmission of bovine tuberculosis to man, of the difficulties of re-inoculation of an organism so readily a carrier of a latent or occult tuberculous lesion.

Conclusions: The bacteriologic study of the few last years has shown that human and bovine tuberculosis proceed from a unique bacillar species, susceptible, like various microbial types known, to adapt itself to the organisms that it infects and to acquire with each of its adaptations specific qualities.

Bovine tuberculosis is transmissible to man and principally to children.

Without giving to this peculiarity more importance than it deserves and *while observing that the majority of the cases of human tuberculosis proceed from contagion between human beings*, it is necessary to maintain entirely and even increase the precautionary measures already taken against bovine tuberculosis.

New researches are necessary in relation to the question of the adaptation of the different species of the classified types of the bacillus of Koch.

* * *

TUBERCULOSIS AND MILK., by Prof. L. Panisset of Lyon. Conclusions of his report: 1. Trade milks contain in various proportion, very often superior to 10%, living and virulent tuberculous bacilli; similar observations are made on the derivatives of milk, such as butter, cheese, fermented milks.

2. The bacilli of Koch contained in the milk come from tuberculous animals, specially when these have specific mammary lesions.

With the absence of all lesions of the mammæ, macroscopically appreciable, the milk may be exceptionally virulent even with animals not recognized tuberculous, except with the tuberculine test.

Bacilli found in trade milks may also come from being soiled at the time of the milking. On account of such soiling, always possible, the milk of a healthy cow may contain tuberculous bacilli.

3. Bacilliferous milk, diluted for market, with a quantity of healthy milks, keeps for a long time its virulency. This explains the frequency with which the bacillus of Koch is found in the milk sold in cities.

4. The unicity of tuberculosis and the specific identity of the tuberculous bacilli of mammalia, not being any longer discussed by anyone, the milk, although containing bacilli of Koch of animal origin, may be pathogenous for man. On account of this condition, perhaps limited, but undeniable, however, of the digestive tracts in the etiology of tuberculosis, the use of tuberculous milk must be considered dangerous for man.

5. The danger is to be feared for children, specially for the youngest. It is certainly less for adults. Repeated and long consumption of raw milk of cows with mammary lesions is a great danger.

The drinking now and then of mixed milk, even bacilliferous, has also a limited danger, but which yet must not be neglected.

6. The general prophylaxy of the transmission of tuberculosis by milk is a part of the prophylaxy of bovine tuberculosis. The exclusion from a milk production of all tuberculous animals is difficult to realize sufficiently rapidly on account of the diffusion of bovine tuberculosis. To this point of view and for the present, one must be satisfied in obtaining from the Governments that the official collectivities should be provided only with milk furnished by non-tuberculous and healthy animals.

7. The difficulties of application and specially of the realization of a method of general prophylaxy oblige the prescription of rules for individual prophylaxy. The heating of milk at 60 degrees for twenty minutes or its boiling for several minutes are sure means to destroy the tuberculous bacilli and insure the innocuity of the milk. Pasteurization offers guarantee if carried out under official control; as it is for the needs of the trade it gives no certainty as far as sterilization of the tuberculous bacillus is concerned.

* * *

TUBERCULOSIS AND MILK.—Prof. J. T. Heymans. The milk of cows can be contaminated by human tuberculous bacilli at the milking time or when submitted to manipulations by persons having open tuberculosis; unless previously sterilized, it can evidently infect man.

Milch cows, suffering only with closed tuberculosis, give milk free from bacilli; those affected with mammary tuberculosis secrete milk which contains almost always bacilli; those whose udder is free from lesions but have an open tuberculosis in another organ, such as the lungs, may contaminate their milk and also that of healthy milch cows, either directly or indirectly by their bacilliferous faecal dejects. In a barn of milch cows, it is sufficient that one or several animals throw out bacilli to expose the entire milk of that barn to become bacilliferous. This milk

mixed with other healthy milks in central dairies may also become a source of infection for men and bovines.

Indeed, the milk containing living bovine bacilli infects most of the domestic animals, among which, as the principal cause, is found in porcine tuberculosis; it is also the most frequent cause of human tuberculosis with bovine type.

It is not yet proved that, in ordinary conditions of life the tuberculous bacillus of bovine type transforms itself in the human body, in bacilli of human type and vice versa.

All milch cows affected with open tuberculosis, and specially those suffering with mammary tuberculosis, must absolutely be excluded from milk production; by prophylaxy, general tuberculation and eventually by vaccination, one must attempt to increase the number of barns of milch cows, totally free from tuberculosis.

In the meanwhile, sterilization by heat imposes itself for any milk, unless there is perfect certainty of the absence of human or bovine tuberculous bacilli.

* * *

MODES OF ENTRANCE AND DIFFUSION OF TUBERCULOUS BACILLUS IN THE ORGANISM.—Report of Prof. M. Friedrich Weleminsky, from Prague.

Conclusions.—1. The first infection by tuberculous bacilli almost always takes place during infancy, so much so that 90% of children ten years old react positively with Picquet's test.

2. As the common form of tuberculosis in infancy is that of the lymphatic glands, specially the cervicals, and as pulmonary tuberculosis is very rare in scholars, it is certain that the primary infection which can be traced with certainty, that of infancy, does not begin generally in the lungs, although children are exposed to the aerogenous infection as much as adults.

3. It is then probable that the ordinary form of tuberculosis of adult, the pulmonary, is not either a primary infection, but very often a continuation of the infantile tuberculosis of the lymphatic glands.

4. This thesis is also supported by the fact, proved experimentally, that animals, once infected with tuberculosis, after a certain time cannot be infected *de novo*, even if the original tuberculosis progresses or even would bring on death of the animal.

5. This fact may be observed in man. For instance, the cervical and submaxillary glands are not infected in phthisic individuals, although their buccal cavity is constantly occupied by virulent tuberculous bacilli.

6. Another argument in favor of the hematogenous origin of pulmonary tuberculosis is the relative immunity following mitral stenosis, which causes congestion or even increase of pressure in the pulmonary blood vessels, while on the contrary, insufficiency of the pulmonary valve ends regularly with tuberculosis.

7. The extremely frequent lesions of the bronchial lymphatic glands are easily explained by the direct connection of the entire lymphatic system, but specially, as it is easy to demonstrate by experiments on animals, by the direct connections of the bronchial lymphatic glands and the supraclavicular and cervical glands on one side and the retroperitoneal and mesenterics of the abdomen on the other.

* * *

Prof. A. Calmette of Lille presented the following conclusions on the same subject:

1. It is established that conceptional infection is only a small factor in the propagation of tuberculosis.

2. In the immense majority of cases, in man, the bacillar contamination takes place in youth and infancy. It is proved by the extreme frequency of the positive reactions to tuberculine in children between one and fifteen years old. In large cities, one-year-old children, which were free from disease at birth, are already infected in the proportion of 10%. This goes up to 50% in children between 1 and 5 years and to 80% between 5 and 15. In adults it reaches or goes sometimes further to 87%.

In some subjects, the bacillar infection revealed by tuberculin, is not accompanied with any morbid manifestation nor any apparent organic lesion. In the greatest number lesions occur, follicular or limited, which remain for a more or less long time or perhaps always, latent. And again in others, tuberculization is realized and then appears the disease studied by clinicians and anatomo-pathologists under the name of tuberculosis.

The extreme frequency of bacillar contaminations proceeds on one side, from the necessity for man to live in compact social groups, increasing the easy diffusions of tuberculous bacilli thrown out by the diseased organism; and again because of the conditions of social life (lodgings, family livings, alimentation, etc.) increasing in number and severity the occasions for infection.

3. All open doors of an organism susceptible of bacillar infection may be a door of entrance for the tuberculous bacilli. Normal doors of entrance may thus be: the mucous membrane of the natural cavities, particularly the digestive, in those parts where they are more liable to absorb particles in suspension and also the pulmonary epithelium.

The introduction of bacilli can take place also through accidental doors, such as the mucous may offer them, the nasopharynx, the skin or any other tissues.

4. The bacillar infection, in man and in animals spontaneously or experimentally tuberculisable, occurs normally or primitively by the lymphatic circulation.

5. Experimentation, clinical observations and anatomo-pathology demonstrate the preponderance of the digestive tract as a normal door of entrance of the tuberculous bacillus in the organism.

This entrance of the tuberculous bacilli takes place most commonly without leaving on the surface or in the depth of the mucous, the slightest lesion. Cohnheim's law must then be left aside, as it does not answer the reality of the facts.

6. Pulmonary tuberculosis is most ordinarily but the late

manifestation of an infection, first by the lymphatics and later by the circulation, are already old.

7. In young children and young animals, specially sensitive, lymphatic and bloody bacillar infection assumes sometimes the ways of a septicæmia, without resulting in all the cases with the formation of follicular lesions or of tubercles. This septicæmia is frequently curable. However, if the tuberculous bacilli are not eliminated and if they create centers of symbiotic life with the lymphatic cells of the various organs, follicular lesions are formed and the subject remains tuberculous.

This tuberculosis can remain indefinitely or during long years as latent, recognized only by tuberculine reactions, and the carrier subject shows then a manifest resistance to reinfection. But, if the follicular lesions are numerous and disseminated in poorly protected organs, they progress more or less rapidly and give rise either to acute miliary tuberculosis or to an extensive localized infection.

8. Some organisms are naturally or may be made artificially unfit to undergo tuberculous infection. It seems, however, that the required immunity resulting from a mild anterior infection or obtained from artificial method, is not of long duration. It lasts only as long as the organism remains a carrier of bacilli or of latent follicular lesions. It disappears shortly after the time when the aptitude to reaction with the tuberculine ceases.

9. When the tuberculous bacilli enters in an organism, naturally or artificially rendered refractory to tuberculous infection, it may either remain as a harmless foreign body, while still keeping its vitality and its proper virulency, or it may be eliminated with the cellular dejecta of the organism by the natural emunctories, such as the liver or intestine, without losing its vitality nor its virulency towards other susceptible individuals.

It is exceptional that it may be integrally resorbed, the activity of the cellular products of the leucocytes being powerless to dissolve the surrounding membranes that insure its protection.

10. The virulency, that is, the infecting power of the tuberculous bacilli, varies:

- (a) according to the animal species from which they come.
- (b) according to the more or less long time that they have previously been submitted to the influence of external surroundings and physical agents (air, light, heat, desiccation).
- (c) according to their introduction in the organism has taken place in massive doses, at near or distant intervals, or in small doses, single or numerous.
- (d) according to the condition of organism which receives them, whether it is free of all anterior infection or if already tuberculized.

* * *

CONGRESS OF COMPARATIVE PATHOLOGY.—Some time ago I called the attention of our readers to a proposal entertained by the Société de Pathologie Comparée of Paris to organize an international Congress of Comparative Pathology. This Congress will be held in the Faculty of Medicine between the 17th and 24th of October. At the various sittings of this first international reunion of comparative pathologists, the diseases common to men and animals will not only be considered, but also the relations that may exist between the diseases of the different species.

There will be besides important papers and communications relating to vegetable pathology and the possible relations which may exist between certain diseases of plants and those of animals.

The principal questions which will be presented in the various orders of the day will be: Tuberculosis, human and aviary diphtheria, cancer, variola and vaccinia, parasites common to man and to animals, nervous diseases, rabies, comparative study of cirrhosis; pathology of inferior animals, experimental pathology, milk, vegetal pathology. As may be seen by this long programme, the work of this congress will be very important.

The committee of organization contains the names of many eminent pathologists of various countries, and among them are

found those of some of the most pre-eminent men in both veterinary and human medicine.

As already stated, all communications and applications for membership must be addressed to Mr. Grollet, General Secretary, 42, rue de Villejust, Paris.

IN MEMORIAM—LEONARD PEARSON.

This, I have received and for it I thank those who have thought to send it to me. It is a handsome little volume, where the professional life of our departed friend is passed in review. A biographic sketch is presented by his most intimate and devoted friend, Dr. C. J. Marshall, whose affection was illustrated by the giving of his own blood to save the life of the one he loved so much.

The memorial exercises with the discourses delivered by the learned gentlemen of the committee organized for that ceremony, are reported, all full of eulogies, worthy of that great veterinarian.

The little volume closes with the records of the tributes from friends and fellow-workers, expressing their feelings of sad regrets and referring to the relations that had existed between them and Pearson.

From everywhere, in the United States, in Canada, in Germany, in Denmark, etc., where Pearson was known and had friends, there came words of affectionate remembrances and deep sorrow at the news of the great loss the veterinary and scientific world had sustained.

In Memoriam will always bring to the mind of every American veterinarian the noble example of one, of whose services the profession was so much in need!

* * *

BIBLIOGRAPHY.—*The rendering industry.* (L'Industrie de l'équarrissage.) Rational manipulation of the corpses of animals, of bad meats, remains from butcheries, etc., by M. Martel, Chief of the Sanitary Veterinary Service of Paris—published by

N. Dunod and E. Pinat, 47, Quai des Grands Augustins, Paris. Price 12f. 50.

This French work is written by a thorough sanitarian, with the intention of calling attention not only to the deficiency of the industry of rendering in France, but also to the great many advantages and benefits that can be derived by proper organized establishments with modern machineries and similar improvements.

In many parts of Europe these industries are well organized—the work is carried out in them in a manner which is far ahead of what it used to be, the results obtained are such that the notion of old time, that in a dead animal only the skin was of value, must be forgotten in the presence of the valuable products which can now be obtained by proper improved processes.

The work of Mr. Martel is presented handsomely printed, containing in 366 pages a minute description of the work in rendering establishments. It is illustrated by 122 plates and the contents are divided into 27 chapters. Amongst which, after considering the old methods of rendering and their imperfections and describing the modern processes with their advantages, some of the modern rendering establishments in Europe are referred to. The French legislation, the professional diseases, or those to which the men working in those establishments are exposed, and finally the legislation in some foreign countries.

Mr. Martel is already well known as a thorough sanitarian; he has already published other works on that specialty; his journal, *l'Hygiène de la Viande et du Lait*, is well known, and does good work; he is an authority. His last effort will certainly receive the appreciation that it deserves.

* * *

BIBLIOGRAPHIC ACKNOWLEDGMENTS. *Intracellular bodies* associated with equine anemia, by W. B. Mack, D. V. M.; *Chicago Veterinary College, Quarterly Bulletin*; *The West Australian*, with a very interesting article on Milk Supply, by E. A. Weston, B. V. Sc. V. S.; from the *Bureau of A. T. bulletin* 473

on Tuberculosis; *circular* 182 on the Spontaneous oxydation of arsenical dipping fluids, by A. V. Fuller of the Biochemic Division; *circular* 183, on directions for constructing a vat and dipping cattle to destroy ticks, by H. W. Graybell, D. V. M., and W. P. Ellenberger, D. V. S.

A. L.

AUTO THERAPY.

In the September, 1909, issue of the AMERICAN VETERINARY REVIEW, Professor Liautard chronicled the results of *Autoserotherapy* in the treatment of sero-fibrinous pleurisy, which had been the subject of a communication from the *Presse Medicale*. We will not reproduce the article here, as our readers can refresh their memories on it by referring to the original on pages 638-39 in the number referred to. Suffice it to say, that the method described therein was the introduction of a Pravaz exploring needle into the chest, fill with the fluid from the chest cavity, and without withdrawing it entirely, it is carefully introduced under the skin and the contents are injected. Its result is to stimulate resorption of acute pleuritic effusion. The quantity of urine secreted is suddenly increased; as much as three times the amount and sometimes more. Again in the January, 1910, number of the REVIEW, page 408, Professor Liautard writes under the caption of *Autoserotherapy*, speaking of the "new method much used in human medicine by German and French practitioners." A physician in St. Petersburg, by the name of Marcou, had applied it to eighty-two individuals, every one of whom had recovered, and from his experience he believed that it was applicable to all carriers of a serous or even hemorrhagic effusion; pus only being contraindicated. The same article relates the experiments of a Dr. Bourget in a communication to the Sixteenth International Congress of Medicine at Budapest, which treats of the clinical results of serotherapy in general, which are not so encouraging. Again, it is the mission of the REVIEW to record experiments with autotherapy; this time not *autoserotherapy*, and

not drawing the line at serous or hemorrhagic effusions and not excluding pus. So that under the head of "*Autotherapy—Its Application in the Treatment of Septic Diseases in the Horse*," by Dr. D. J. Mangan (veterinarian), New York City, on page 422 of this issue, we give to the American veterinary profession the careful scientific investigations, combined with clinical records, of an American veterinarian in this method of treating diseases. Dr. Mangan has for sometime been studying the methods of Dr. Charles H. Duncan (physician), Attending Surgeon of the Volunteer Hospital, New York, whose success from this method of therapy in human practice actuated him (Mangan), to take up the work in veterinary practice. Dr. Duncan is regarded as an authority on the subject in the medical profession, and we shall publish a paper presented by him to the Veterinary Medical Association of New York City in the August number of the REVIEW.

DR. NORTON RESIGNS.

Older readers of the REVIEW, particularly those interested in state control work, will be interested and disappointed to learn that Dr. J. C. Norton has resigned and retired from state control work in Arizona. Dr. Norton was first appointed by a Democratic Governor, reappointed by a Democratic Governor, and successively reappointed by five Republican Governors. He has been in constant service there for 19 years as Territorial Veterinarian.

Among the many good things which Dr. Norton has done during that time and for which, in his modesty, he will probably never receive due credit, (unless someone publishes it for him), is the fact that from 1894 to 1900 he had in operation the field or pasture rotation scheme for Texas Fever eradication, and in those seven early years actually freed a large valley from Texas Fever ticks. Within the past few years this plan has been in popular use in many of the Southern states.

Practically all of the Arizona present veterinary sanitary laws are due mainly to Dr. Norton's suggestions. The present condition of Arizona's sanitary control work is suggested in a

statement recently published in an Arizona paper (which, with much other data, we have received through the courtesy of one of our esteemed collaborators, Prof. M. H. Reynolds, University of Minnesota, who has the honor of numbering Dr. Norton amongst his "old friends"), commenting upon his resignation, "Stockmen have forgotten what a local quarantine is."

Those who know him will be very sure that his fine manliness and his energetic, clear-headed business ability have never done otherwise than gain public respect and confidence for our profession. The lives and the work of such men as Norton remind us over and over that our rank and recognition as a profession and the public respect we hold as a profession depends largely on the showing made by the individual veterinarian in his home neighborhood.

Dr. Norton is about to realize a long cherished dream, that of owning and operating a model dairy farm, on a large scale. We wish him all success—not for the money. He doesn't need that. We will all wish him success for the real social service he can render.

MULE PROVES BETTER THAN MOTOR-TRUCK IN UNITED STATES ARMY: Pursuing our former contention that actual demonstration and not sentiment must decide as to whether the horse-drawn or the motor truck is the more practicable and economical for general trucking, and therefore the one which will endure, we have extracted the following statement of Colonel R. N. Getty, Provisional Regiment, United States Army, from the *New York Tribune* of June 21, which shows that even the slower mule has won a victory over the motor-truck in the Army service: "The automobile demonstration has been such as to warrant the conclusion that it is unwise and unsafe to supersede army mules and wagons with the troops, by any other form of locomotion." We also extract from the Second Annual Report of the New York Women's League For Animals: "Although automobiles are increasing, all the business traffic below 14th Street is still being done by horses, and it will be for many years."

ORIGINAL ARTICLES.

ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

BY D. E. SALMON, D.V.M., MONTEVIDEO, URUGUAY, S. A.

VII. (Conclusion).

THE POISONOUS DOSE OF ARSENIC.

In the articles which have preceded, an effort has been made to show the quantity of arsenic deposited on the grass and hay of the Deer Lodge Valley, the quantity per 25 pounds of air-dry ration, the proportion which was soluble, and the quantity which existed in the organs of animals which had died or that were sacrificed for examination. Thus, there was found by Swain and Harkins in the samples of hay and grass, analyzed in 1906, arsenic varying in quantity from 1.7 grains (0.1102 gram) all the way to 123.4 grains (7.996 grams) per 25 pounds (11.36 kilos) of air-dry substance. It was also demonstrated by Haywood that from 22.2 per cent. up to 80.6 per cent. of this arsenic was soluble in water. It was, therefore, made plain that adult equine and bovine animals might ingest at times as much as 99.5 grains (6.447 grams) of water-soluble arsenic per day. However, the average quantity of arsenic per 25 pounds air-dry substance found by Swain and Harkins in 1906 was 25.2 grains (1.633 grams), and the average solubility in water, as determined by Haywood, was 54.1 per cent. The average daily dose of soluble arsenic ingested by adult horses and cattle, as indicated by these determinations, was, therefore, 13.62 grains (0.894 gram).

The question which is naturally suggested by these determinations is, "What is the minimum daily dose of arsenic which

produces injurious effects in these animals?" And it was found that this question was, at that time, by no means an easy one to answer. In order to present the question fairly, the writer will bring together such relevant data as he has been able to collect bearing upon this point.

Fröhner (1) gives the following table showing the average fatal dose of white arsenic in powder:

	By the Stomach.	On Wounds.
Cattle	15 to 30 grams	2.0 grams
Horses	10 to 15 grams	2.0 grams
Sheep and goats.....	10 to 15 grams	0.2 grams
Swine	0.5 to 1 grams	0.2 grams
Dogs	0.1 to 0.2 grams	0.2 grams

Kaufman (2) expresses the opinion that it requires 45 grams (1.5 ounces) in powder to kill a horse, while 3 to 4 grams (46 to 62 grains) in solution is sufficient. On the other hand, "Percivall mentions that two glandered horses getting 5 grains daily in a bolus were attacked, one on the 8th, the other on the 9th day, with shivering, loss of appetite, nausea, purging and other symptoms of abdominal irritation, imperceptibility of the pulse and prostration of strength" (3).

Porcher (4) says that certain veterinarians have reported fatal accidents with the horse following doses of 4 to 5 grams, given by the mouth with the object of combating the larvæ of the *Oestrus*. The same author refers to a sheep which was not incommoded by 32 grams of arsenious acid, also to a report by Durréchou of the death of a cow which had only received 5 grams daily for two days, or 10 grams in all. Detroye, with a daily dose of only 1 gram, reported a fistula of the second stomach with a cow.

Harkins and Swain (5) cite an experiment of Spallanzani and Zappa, who fed moderate quantities of arsenic continuously to a Durham cow for 46 days, when death resulted. From 0.5 to 3.0 grams (7.7 to 46.3 grains) of arsenious oxide were administered daily, the dose being gradually increased to the maximum, when the animal died. Spallanzani concludes from this

and other experiments that cattle will take without injury, over indefinite periods, doses of 0.5 to 0.7 gram (7.7 to 10.8 grains) of arsenic trioxide per day, and may indeed increase in weight under it. They first show toxic symptoms with doses of 1 gram (15.4 grains) per day. The maximum non-toxic dose for cattle is given as about 0.00015 part of arsenious oxide per day for 100 parts of body weight (1.5 mg. per kilo), or 10.5 grains per day for an animal weighing 1,000 pounds. They also cite the statement of Hertwig that he gave arsenic to eight different horses in doses beginning with 20 grains, but increasing to a dram, and continued these doses for from 30 to 49 days with no bad effects; on the contrary, the condition was improved.

To obtain a clearer idea of the toxic dose for horses, Harkins and Swain (6) fed a horse on flue dust containing a total of 20.65 per cent. of arsenic calculated as trioxide, and 17.89 per cent. of soluble arsenic, also calculated as trioxide. Considering only the soluble arsenic, the horse was fed two grams (30.8 grains) of arsenic trioxide for 18 days in addition to hay containing about 0.003 per cent. (5.2 grains per 25 lbs.). At the end of this period the animal died from poisoning.

To a second horse they gave 2.8 grams (43.12 grains) of arsenic trioxide in two doses, on the first day mixed with bran and on the second as a drench. On the fourth day the animal died.

A third horse died on the third day after having been given two doses of 7.5 grams (115.5 grains).

From all of these observations and experiments we must conclude that the action of arsenic trioxide in powder is very irregular. This irregularity probably depends partly upon the particular specimen of arsenic and partly on the individual animal. The principal cause of this irregularity, however, is the physical property of this powder, already explained, which prevents it from being moistened by water and enables a great part of it to pass through the digestive tube without going into solution. Nevertheless, it seems clear from the experiments of Spallanzani that a daily dose of 1 gram will produce toxic symptoms in some of the cattle which receive that dose; and from the experiments of

Harkins and Swain that 30.8 grains of soluble arsenic, calculated as trioxide, in flue dust, plus about 3 grains soluble arsenic on the ration of hay, or in all a daily dose of 33.8 grains (2.2 grams) may not only cause symptoms of poisoning, but fatal results in less than three weeks.

This experiment of Harkins and Swain is worthy of special attention for the reason that the arsenic was in the form of flue dust and hay dust, that is, in the form in which it was habitually ingested by the animals of the Deer Lodge Valley. In this form it is easily moistened by water, and no doubt the soluble part is dissolved in a very short time after it reaches the stomach. We should, therefore, expect poisoning with minimum doses, and much more regular and constant results from arsenic in this form than from white arsenic in powder. As a matter of fact, the result obtained by Harkins and Swain in this experiment differs little, if at all, from that which follows the administration of arsenic in solution.

Finlay Dun (7) says that "Thirty grains daily dissolved in potassium carbonate destroyed a horse in four days."

The following is a summary of an experiment made by the writer, bearing upon this point:

A horse of about 850 pounds, in moderate condition of flesh, with good circulation and respiration, and that had not been exposed to the arsenical smoke-products, was selected.

August 29, 1906. There was administered 20 grains of arsenious acid in powder.

August 30. Administered 40 grains dissolved in potassium carbonate solution and mixed with bran.

August 31. Animal slightly dull; appetite diminished. Repeated dose of 40 grains.

September 1. Animal apparently normal. Repeated dose of 40 grains.

September 2. Animal quite ill; dull; no appetite; excrement covered with thick, stringy, white mucus; pulse almost imperceptible; artery tense; respiration accelerated; urine voided in small quantities; slight paralysis shown by difficulty of walking;

temperature 102.1° F. Repeated the dose, but the animal only ate a few mouthfuls and did not ingest more than one-tenth of the arsenic.

September 3. General appearance improved, but has no appetite; drinks little and walks very stiffly. Mucous membranes red, pulse almost imperceptible, artery tense, temperature 100.8° . Endeavored to give 40 grains of arsenic in solution by injecting it with a syringe into the pharynx. About three-fourths of it was ingested.

September 4. Animal very dull, drowsy, without appetite, drinks little, excrement soft like that of cows, visible mucous membranes much congested. Artery at the jaw is tense and full, but pulse is small and weak, scarcely perceptible and could not be counted. Heart beats, quick, jerky, but not violent, 87 per minute; respiration 21; temperature 100.7° . Difficulty of movement has increased until the animal is hardly able to walk. Endeavored to repeat the dose, but only about one-half was ingested.

September 5. Weakness, drowsiness and paralysis more pronounced; mucous membranes very red; respiration easy, 21 per minute; heart beats quick, well-defined, 87; temperature, 99.8° . No symptoms of pain. No arsenic administered. Died at 10 a. m.

This horse died in seven days from the administration of the first dose. The total quantity of arsenic which it was attempted to administer was 260 grains, or 37.1 grains per day. The estimated quantity ingested was 194 grains, or 27.7 grains per day. This animal was severely poisoned in four days with 140 grains of arsenic, 20 grains of which were in powder; that is, an average of 30 grains a day in solution and 5 grains in powder.

Cornevin (8) gives an account of the experiments of Cocconi and Schappe on the influence of arsenic in fattening of ruminants. They commenced with bovine animals with daily doses of 0.1 gram (1.54 grains) of arsenite of soda and gradually increased to 1 gram (15.4 grains). Larger doses could not be given without the appearance of symptoms of poisoning.

There can be no doubt, therefore, that 30 grains of arsenic in solution ingested by a horse or bovine animal daily will soon produce severe symptoms of poisoning, and if continued will cause death; and that about half that quantity will produce symptoms of poisoning after a longer time.

Efforts have been made by various investigators to obtain a more definite determination of the poisonous dose by injecting arsenical solutions subcutaneously, intravenously and intraperitoneally, and such experiments seem to establish the fact that as the animal increases in size the fatal dose per unit of body weight decreases.

Thus, Löffler and Rühs (9) were able to give guinea pigs 6 milligrams of arsenious acid per kilo of body weight by intraperitoneal injection of their solution (dissolved in a solution of caustic soda and afterwards neutralized with hydrochloric acid) as a medicinal dose in the treatment of trypanosomiasis. In the same manner they were able to give 7.5 mgs. per kilo to rats.

Weber and Furstenberg were able to give rats as much as 8 mgs. per kilo in the peritoneum as a therapeutic dose.

Roehl (10) gives as the maximum dose of atoxyl per kilo for mice and rats 0.17 gm. and for guinea pigs 0.08 gm. That is, rats and mice, the smallest of the experimental animals, are able to support from 25 per cent. to 100 per cent. larger doses of arsenic per kilo of body weight than are guinea pigs, the animals which come next in size.

G. Brouardel (11) found the fatal dose (solution with carbonate of soda) for guinea pigs intraperitoneally to be 16 mg. per kilo, and subcutaneously 13 mg. per kilo. For rabbits subcutaneously, the fatal dose was 10 mg. per kilo.

With dogs, Rouyer and Feltz (12) found that the absorption of 2.5 mg. per kilo sometimes and 3 mg. per kilo always caused death. The writer has administered as much as 3.3 mg. per kilo subcutaneously (solution of Löffler and Rühs) without causing death, although the same dog died 10 weeks later from a dose of 2.9 mg. per kilo.

The fatal dose of arsenious acid subcutaneously for these ex-

perimental animals may, therefore, be placed as follows per kilo of body weight: mice and rats, 20 mgs.; guinea pigs, 13 mgs.; rabbits, 10 mgs.; dogs, 3.5 mgs.

Attention is directed to this diminution of the fatal dose per unit of body weight as the species increases in size, for the reason that efforts have frequently been made to calculate the fatal dose for the larger animals and man from these determinations made with the smaller experimental animals. The results of such calculations evidently have little value and we can only conclude in a general way that the fatal dose of absorbed arsenic for man and for horses and cattle is probably considerably less per kilo of body weight than for dogs.

The writer attempted to determine the maximum dose which could be given subcutaneously to horses without fatal poisoning. In one case, mild symptoms (dullness, loss of appetite, diarrhoea) resulted from 0.9 mg. per kilo. The largest dose reached in another animal was 1.6 mg. per kilo, and in this case the general symptoms consisted of dullness, very marked venous pulse in the jugulars, tense artery and weak arterial pulse. It appeared, however, that a great part of the arsenic was fixed at the points of inoculation, for notwithstanding great dilution (1 to 1000) and the injection at six different points, the skin over the entire area where the solution was diffused became necrotic and sloughed, as well as the subcutaneous tissues. The injections were abandoned because of the intense local action.

Holmes (13) fixes the maximum therapeutic dose of atoxyl subcutaneously for horses at 25 mgs. per kilo. Some writers have placed the toxicity of arsenic in solution at 40 times that of atoxyl, but according to Launoy (14), with whom the writer is inclined to agree, it is only 8 to 10 times as toxic. We might, therefore, conclude that about 3 mg. per kilo of absorbed arsenic would be a fatal dose for a horse. For a horse of 400 kilos that would be equivalent to 18.5 grains. As it probably requires $2\frac{1}{2}$ to 3 times as much by the mouth to produce the same effect, the fatal dose of arsenic in solution when ingested would be for a horse of that weight from 46 to 56 grains, which corresponds

very closely with the results obtained by Harkins and Swain and the writer, as well as with the opinion expressed by Kaufman.

It appears, therefore, that a single dose by the mouth of 60 grains of arsenious acid in solution will probably prove fatal to a horse of 400 kilos (880 lbs.); that a daily dose of 45 grains for two consecutive days proved fatal (Harkins and Swain); that five daily doses of 40 grains each have proved fatal (experiment of the writer); that four daily doses of 30 grains each have proved fatal (Finlay Dun). As to smaller doses continued daily for a longer time, we have the conclusion of Spallanzani, and, also, of Cocconi and Schappe that 1 gram (15.4 grains) will produce toxic symptoms in cattle.

As to sheep, Harkins and Swain (15) gave to one which weighed 95 pounds, 0.181 gram of arsenic trioxide twice a day (5.57 grains daily). It died in 7 days. To another weighing 87.5 pounds they gave 0.123 gram (1.9 grains) of arsenic trioxide in the form of sodium arsenite once daily for 25 days. It died 8 days after the administration of arsenic was stopped, that is, 33 days after the beginning of the experiment. To a third sheep weighing 115 pounds they gave 0.055 gram (0.85 grain) once a day of arsenic trioxide in the form of sodium arsenite. It died at the end of 69 days. To a fourth sheep weighing 90.5 pounds they gave 0.021 gram (0.32 grain) of arsenic trioxide in the form of sodium arsenite for 35 days, and then increased the dose to 0.09 gram (1.39 grains). The experiment was concluded at the end of 90 days, when this animal was still living, but would probably have died soon had the arsenic been continued, as it had lost 30 pounds in weight during the 55 days that it received the larger dose.

UNUSUAL SUSCEPTIBILITY TO ARSENIC.

The susceptibility shown by the animals in the experiments referred to above may be regarded as the average susceptibility. Among a considerable number of individuals there are always a few which are very much more susceptible than the average. The two glandered horses reported by Percivall which died from daily doses of five grains, are examples of this.

In human medicine, many cases of great susceptibility have been reported. The fatal dose of arsenic trioxide is placed by Peterson and Haines at about 3 grains of absorbed arsenic (2.8 mgs. per kilo), and the therapeutic dose of arsenic in solution (Fowler's solution) is generally from 1-50 to 1-10 of a grain. Peterson and Haines say (16):

"The writer has known cases that would have diarrhœa, slight colic, and conjunctivitis after taking two drops of Fowler's solution thrice daily for three weeks. A remarkable case of this kind was reported by Nicholson. After taking in two days 15 minims of liquor arsenicalis (B.P.) representing not more than one-sixth of a grain of arsenious acid, in doses of 3 minims after meals, an attack of diarrhœa came on, an erythema appeared, which covered the whole body, and the eyes were reddened. As soon as the arsenic was discontinued the symptoms disappeared."

In the hearing before the Royal Commission on Arsenical Poisoning Dr. Neech said he had the details there of a case of arsenical poisoning with *well marked paralysis* due simply to the administration of medicinal doses of arsenic. It occurred in Halifax. Sir William Church answered, "We know that condition very well. I have a photograph of the case here. It was due to ten minim doses (1-10 grain) daily, extending over three weeks" (17).

Mr. E. Sargeant testified before the same Commission: "At the present time I understand that 50 per cent. of the persons attacked still suffer from the effects of the poisoning, and, with few exceptions, those who have returned to work still complain of nervousness, debility and cardiac troubles. The men that I examined usually drank from 2 to 4 pints of beer daily, with an extra allowance towards the end of the week. Three females, whose beer consumption did not exceed one pint daily, came under my notice suffering from arsenical symptoms; in one case not more than half this amount of beer was consumed, and I calculate that the dose of arsenic taken would be equivalent to 1-20th of a grain per diem" (18).

What we learn from these observations is that while the aver-

age fatal dose of arsenic for man is 3 grains, there are some individuals who are paralyzed by one-thirtieth of that quantity ($1/10$ th grain) daily for three weeks; others that are severely poisoned by one-forty-eighth of that quantity ($1/16$ th grain) daily, and occasional individuals who present well marked symptoms after taking one-sixtieth of that quantity ($1/20$ th grain) daily.

If the same proportion held true for horses and cattle, admitting the average fatal dose to be 60 grains in solution, some individuals would be poisoned by 2 grains daily, others by $1\frac{1}{4}$ grains daily, and a very small proportion by 1 grain daily, if continued a considerable time. It is not known that this proportion holds true for these animals, but the writer is convinced, both from an examination of the literature and from his personal observation, that there are some individuals very much more susceptible than the average.

THE CONDITION OF THE ANIMALS WITH RELATION TO THE ESTIMATED DOSE OF ARSENIC.

The average daily dose of 13.6 grains of soluble arsenic taken by horses and cattle of the Deer Lodge Valley, as estimated from the chemical investigations, not only includes the factor of time (that is to say, the average for the different months of the year), but, also, the factor of location (that is the average of different ranches which were variously affected according to distance, currents of air, etc.). It is, therefore, manifestly impossible to draw conclusions from it as to any particular ranch. What it indicates is that the average quantity of arsenic ingested daily was somewhat below the toxic dose for animals of ordinary susceptibility. This explains why the great majority of the animals, at certain seasons of the year, presented no symptoms of arsenical poisoning. It probably is the explanation of the good condition of many cows, owned by citizens of Anaconda, which were permitted to pasture in the neighborhood of the smelter; but the extent to which the pasture of these cows was supplemented by arsenic-free food is unknown. At all events, cases of acute poison-

ing in 1906 were comparatively rare, and by acute poisoning is meant all of those cases in which active symptoms were observed.

In examining, however, a herd of horses in which there were no active symptoms and which were on apparently good pasture, it would be observed that a part of them were not in the condition that would be expected from the quantity of food which they were able to obtain. The hair was lustreless, on certain parts of the body it was unusually long, the animals lacked spirit and were sometimes even dull and drowsy. Examining them more closely, the so-called *garlicky breath* was easily detected, being much more evident in some than in others. It was not exactly the odor of garlic, but approached that odor very closely. When the warm carcasses were opened for examination, this same odor was given off by the internal organs, and especially by the intestinal contents, often in such concentration as to be nauseating to the persons who were near. Eating food in the restaurants of Anaconda, the eggs and the steak would sometimes be so saturated with this flavor as to be unpalatable. The strength of this odor as given off by the breath, the internal organs and the intestinal contents of the animals appeared to have a direct relation to the quantity of smoke dust that was being ingested, and to the acuteness of the lesions discovered at the autopsy.

An alliaceous or garlicky odor has long been associated with arsenic and with the carcasses of animals which have been poisoned by it. More than half a century ago, Dr. George B. Wood (19) wrote in his treatise on therapeutics:

“On a visit to Swansea, in South Wales, some years since, I was assured by respectable physicians of the place that at the copper smelting works in the neighborhood, which load the whole atmosphere around them with the vapor of arsenic, so that vegetation perishes in the near vicinity, and an alliaceous odor can sometimes be perceived at a considerable distance, the workmen themselves did not appear to suffer.”

Peterson and Haines say (20): “White arsenic has no odor, but if heated on charcoal, it is reduced to metallic arsenic, which

in vapor has an odor of garlic," also, that arseniuretted hydrogen has an odor of garlic.

Autenreith says (21): "B. Gosio was the first to show that certain molds, grown upon media containing minute quantities of arsenic, produce volatile arsenic compounds characterized by a garlic-like odor."

Georges Brouardel says (22): "Certain authors have noted a particular alliaceous odor of the urine" (in arsenical poisoning).

Dr. Eugen Fröhner (23), in giving an account of a case of 15 horses poisoned by arsenic, says the feces had a plain garlicky odor.

So, also, Moussu (24) says that in arsenical poisoning the contents of the stomach exhales an odor resembling garlic.

The garlicky breath and the similar odor exhaled by the organs and intestinal contents of the animals in the Deer Lodge Valley must, therefore, be accepted as a sign of arsenical poisoning, and it seemed to be more marked there than in poisoning from arsenious acid elsewhere, probably on account of the form in which the arsenic existed as it came from the hot furnaces or its combination with the sulphurous acid of the smoke.

Another symptom which appeared to have some relation to the quantity of smoke dust ingested was the *gum line* which has been mentioned by several veterinarians who have described the condition of the animals in the smoke district. This consisted of a band of tissue at the base of both the upper and lower incisor teeth, slightly raised and of a red or purplish color, $\frac{1}{8}$ to $\frac{3}{16}$ ths of an inch in breadth. It appeared to be due entirely to congestion, for it disappeared completely soon after the death of the animals which were well bled at the time of killing.

The heart action of many of the animals was weak and the pulse almost imperceptible.

Occasionally, animals would be seen with marked disturbance of the respiration, partial paralysis of the diaphragm and marked costal breathing, together with labored heart action and tense arteries.

The fact that a "gum line" (25) and, also, paralysis of the

diaphragm with costal breathing (26) have been observed in human beings suffering from arsenical poisoning confirms the conclusion that these phenomena, as seen in the "smoke district" with animals, were really symptoms due to that cause.

In many of the chronic cases, the symptoms were those of weakness, with more or less difficulty in advancing the limbs when walking. Some of these animals were emaciated and on autopsy the fat beneath the skin, about the heart and in the abdominal cavity was translucent, gelatinous, soft, trembly, like a gelatinous exudate, a condition described by Flemming and, also, by Herter (27) in their studies of *fat atrophy*. This is a condition resembling starvation and in these cases appeared to be due to the continued action of arsenic, reducing the appetite, disturbing the digestion, stimulating the metabolism and irritating the kidneys and liver.

It must ever be borne in mind in the attempt to estimate the damage caused by arsenic, that this poison acts not only upon the organs with which it comes in contact when entering the body and when being excreted, but that it has a special tendency to affect the nervous system. And it is clear that the extent of its influence upon the nervous system is most difficult to appreciate in animals, because they are unable to describe the depression of spirits and the weakness which they feel. Horses, which in the Montana atmosphere should have been able to travel the whole day without tiring, would in an hour or two lag in their gait, perspire profusely, breathe heavily, show weak heart action and be unable to keep up their pace.

In this connection, the symptoms recorded by Vidal, Marquez and Dubrandy in their communication to the Academy of Medicine (1888), as observed in the poisoning at Hyères, France, are of special interest as giving a clearer idea of the feelings of the victims:

"The movements were difficult, the legs seemed too heavy for walking. The patients were tired; they had some difficulty in their movements; then the sensation became increased; their legs became heavy; they only walked with the body inclined forward,

swaying as if they had difficulty in detaching their feet from the ground and regaining their equilibrium at each step they took. They advanced their legs half flexed, the toe of their foot dragging " (28).

Symptoms recalling these were seen in some of the horses of the Deer Lodge Valley.

In the autopsies, the congestion of the abdominal organs, and the general appearance of the kidneys and liver were easily noted; and later the condition of the kidneys and liver was quite accurately determined by microscopic examination; but when it came to the nervous system we could only get a general idea from the presence or absence of congestion of the meninges and from the quantity of liquid encountered in the brain cavities. Yet, what a tremendous functional disturbance there might be without its being indicated either by congestion or transudation! It may be that a sufficient search through the brain, the spinal cord and the nervous ganglia would reveal lesions to account for the depression of the heart's action and the heaviness of the movement, but it is evident that it would require the work of a histologist who had specialized on the nervous system and who could devote a great deal of time to the investigation. According to the writer's observations, the functional depression of the heart was not due to fatty degeneration of the heart muscle, but to a failure or disturbance of the nervous influence.

The autopsies that were made do not, therefore, reveal the whole story, and, so far as horses are concerned, they possibly leave the most damaging effects of the arsenic undiscovered. With cattle and sheep, the value not depending upon the freedom and rapidity of movement and their endurance on the road, the effect on the nervous system is of much less importance.

An unusual number of hemorrhages occurring in the tissues, especially in those of the brain, lungs and kidneys at the time of slaughter, or, at least, showing as recent lesions were observed, indicating, no doubt, a weakening of the vascular walls.

In the early summer, the symptoms were for the most part those of very chronic poisoning, but, later, as the smoke came

over the valley more frequently, there appeared the ulcerated nostrils, colics, cerebral symptoms, diarrhœa, disturbance of the heart and muscular paralysis. That some of the cases of colic, as well as the "fits" and "staggers" had other elements in their etiology than arsenical action is probable, but, admitting this, it is certain that the irritating action of the arsenic on the walls of the digestive organs favored the development of digestive disturbances and colics, and that the action of the arsenic on the brain increased the congestion about any chronic lesions which might exist in this organ and caused the development of active symptoms.

Dairy cattle would be doing well and showing no symptoms of poisoning, then the smoke would come over the pasture for a few days and there would be a sudden shrinkage in the quantity of milk which was obtained; there would be salivation and drooling of mucus from the mouth, constipation, often followed by diarrhœa, red and weeping eyes, loss of appetite, cough, garlicky breath and feces covered with mucus.

Salivation, the writer has found to be a common symptom of arsenical poisoning, and occurs even when the arsenic is administered by subcutaneous injection. It is, therefore, probably due to the excretion of arsenic through the salivary glands, and not, as might be supposed, to the irritating effect of the arsenic on the mucous membrane of the mouth when it is being ingested.

During the months of the year when the smoke was carried away from the valley by the air currents, the great majority of the animals did not present symptoms which would lead one to suspect, from their general appearance, that they were suffering from the effects of arsenic. There were, however, marked exceptions, one of which will be given as indicating how some animals would be poisoned during the most favorable portion of the year. This was a colt, 11 months old, which died June 30, 1906, and the postmortem was No. 26 of this series. It had been on the Para ranch for some time and was examined carefully by the writer 3 or 4 days before its death. At that time it was in a cachectic and very weak condition, with a well marked red gum

line at the base of the teeth, and with very long hair over the greater part of the body. The statement regarding its death was that it had been haltered and an attempt made to lead it to the stable, when it suddenly threw up its head, staggered, fell and died.

Autopsy notes: Two ounces of straw colored fluid in the pericardium. Lungs show many small hemorrhages under pleura, and, on section, throughout the tissues of these organs. The small anterior dependent lobules affected with broncho-pneumonia, and the small air-tubes partly filled with a cream-like exudate. Trachea and larynx very much congested. Stomach red in pyloric portion and mucous coat covered with thick, tenacious mucus. Small intestines red, acutely inflamed at various points, mucous membrane covered with thick, white, muco-purulent material. Colon has a large red area near diaphragmatic flexure. Bladder very congested, and contained a small quantity of thick, turbid urine, which turbidity on microscopic examination was found to be principally due to a great quantity of renal epithelium. Kidneys large, light colored. Liver large, friable, with large, light colored areas showing through the capsule, and contained 31.7 parts of arsenic per million. Vessels of brain very much congested. There was an extensive red area on the superior surface of the left cerebral hemisphere caused by distended vessels and extravasated blood.

The cachectic condition, the long hair, gum line, inflamed stomach and intestines, effusion in the pericardium, congestion and hemorrhage of the lungs, inflammation of the kidneys, congestion of the bladder, congestion and hemorrhage of the brain, degeneration of the liver and the great quantity of arsenic in the tissues of this organ are clear indications of arsenical poisoning.

This was an example of an animal retaining its appetite up to the time of its death, its stomach at the autopsy was found full of food, and although at that season of the year there was much less arsenic to be ingested than later in the summer, the liver contained far more than the average quantity found in that organ.

A great contrast to the case just given was that of another

colt, the autopsy of which was made August 11, 1906, and was No. 36 of this series. This case is of special interest because the diagnosis was contested vigorously and with great confidence by the defense. The writer in making the autopsy did not examine the anterior mesenteric artery and the experts for the defence, arriving soon after he had left, *did* examine this artery and alleged that it was completely obstructed by a thrombus, and that this obstruction was the cause of the pathological condition which caused the animal's death.

The writer's autopsy notes were as follows: Subject, two-year-old colt, weight about 1000 pounds; had recently died; no odor of decomposition.

Lungs very much congested, especially in the dependent portions. Hemorrhage into some of the lobules and interlobular lymph spaces. Mucous surface of trachea deeply congested and very red. Extravasations under the serous membrane of thoracic cavity beneath the spine.

Abundant, blood-tinged effusion in the pericardium.

Stomach, acutely congested; many hemorrhages of small extent under lining membrane of cardiac portion; recent hemorrhage in pyloric portion and in anterior portion of duodenum. Many hemorrhages under serous coat of small intestines, from mere points up to $\frac{1}{2}$ inch in diameter. Mucous coat of small intestine acutely inflamed, in parts blood red; in anterior portion pigmented and hemorrhagic; in median portion gray and catarrhal; in posterior portion the contents were tinged with blood. Colon acutely congested, mucous membrane dark red; hemorrhages from a point to several inches across. Caecum, entire mucous membrane dark red.

Kidneys much congested; right weighed $3\frac{1}{4}$ and left $3\frac{1}{2}$ pounds.

Spleen large, soft, almost a pulp, weight 5 pounds.

Liver, large, soft, weight 25 pounds, contained 2.2 parts of arsenic per million.

Bladder very much congested, hemorrhagic at opening of ureter, at which point was a firm, dark brown coagulum, ap-

parently a blood clot. Urine brown, tinged with blood. Microscopic examination shows vast numbers of epithelial cells and aggregations of reddish granules which seemed to be broken down blood-globules.

This animal had been on pasture and had been affected with colicky pains for several days before death; it had eaten little during this time, so that the ingestion of arsenic had been small, which doubtless accounts for the comparatively small quantity encountered in the liver.

The writer is of the opinion that this was a case of arsenical poisoning, and he is further of the opinion that the congestion of the trachea and lungs, the hemorrhages into the lungs and under the pleura, the large effusion in the pericardium, the hemorrhages in the stomach, the great congestion of the kidneys, the congestion and hemorrhage of the bladder, the large quantity of epithelium in the urine and the great congestion of the spleen and liver would not have been caused by a thrombus of the anterior mesenteric artery, even had the obstruction been complete. On the other hand, such lesions are common in acute arsenical poisoning.

THE EXCRETION OF ARSENIC BY THE MAMMARY GLANDS.

The quantity of arsenic excreted with the milk is of much interest from several points of view; it is interesting to know that a considerable portion of the ingested arsenic may be excreted through this channel; it gives some indication as to whether arsenic is being absorbed from the digestive tract in dangerous quantities, and it furnishes a basis for deciding whether the milk is safe for consumption as human food. As this line of investigation was foreign to the legal inquiry then in progress, it was not pursued further than was necessary to establish the fact that arsenic was being excreted in considerable quantities with the milk, and that this subject was worthy of attention from a sanitary point of view.

The following table of analyses by Harkins and Swain contains all the analytical data which were obtained with reference to this question (29):

Table Showing Quantity of Arsenic in Milk Produced by Deer Lodge Valley Cows.

No. of Sample.	Date, 1906.	Miles from Smelter.	No. of Cows.	Parts As_2O_3 Per Million.	Grains As_2O_3 to 100 Gallons.
1	Sept. 21	4.5 NNE	5	2.94	17.7
2	Nov. 3	3 E	1	0.47	2.83
3	Nov. 3	6 NNE	1	0.70	4.00
4	Nov. 3	4.5 NNE	2	0.18	1.08
5	June 28	4.5 NNE	1	1.40	8.42
6	June 27	5 E	1	1.00	6.02
7	July 2	3 SE	1	4.20	25.28
8	June 28	3 N	5	3.40	20.47
9	June 23	3 W	1	5.70	34.30

In considering the results of these analyses, it should not be forgotten that the ration of many cows, and at least some of those from which this milk was obtained, contained bran and grain imported into the valley and arsenic-free.

This table shows that the milk not only contained an appreciable quantity of arsenic, but that in some instances it contained a remarkably large quantity. That is, in sample 1, over one-sixth of a grain per gallon, in sample 8, one-fifth grain per gallon; in sample 7, one-fourth grain per gallon, and in sample 9, one-third grain per gallon. Should a person daily drink a pint of the milk from which sample 9 was taken, and ingest another pint with tea, coffee, custard or other food, he would be ingesting one-twelfth of a grain of arsenic per day. Should he in addition to this eat one-half pound of liver containing 30 parts per million of arsenic, as might easily occur in the Deer Lodge Valley, he would ingest an additional one-ninth of a grain, making in all nearly one-fifth of a grain per day. The reader can form his own opinion of what would happen should this person be one of those sensitive individuals who is made ill by a dose of one-twentieth of a grain of arsenic per day.

In the arsenical poisoning from beer which occurred in England, 3,245 cases of poisoning were discovered. The report says: "The quantity of arsenic in the beer has been in exceptional cases

as high as about $1\frac{1}{2}$ grains per gallon—in one sample 3 grains. As a rule one to one-half to one-quarter of a grain per gallon or less.” Of 160 samples of beer analyzed by the Brewers’ Expert Committee, 84 were quite free. The remaining 76 contained from one-tenth to one-four hundredths grain per gallon; and 27 contained more than one-twentieth grain, a quantity which they regarded as dangerous.

The Royal Commission on Arsenical Poisoning reported as follows (30):

“In our view it would be entirely proper that penalties should be imposed under the Sale of Food and Drugs Acts upon any vendor of beer or any other liquid food, if that liquid is shown by an adequate test to contain one-one hundredth of a grain or more of arsenic in the gallon; and with regard to solid food—no matter whether it is habitually consumed in large or small quantities, or whether it is taken by itself (like golden syrup) or mixed with water or other substances (like chicory or ‘carnos’)—if the substance is shown by an adequate test to contain one-one hundredth grain of arsenic or more in the pound.”

This commission did not make the above mentioned report until after it had completed a long and diligent investigation, having before it the results of many special investigations and the opinion of many eminent scientific men. It is tolerably safe to conclude, therefore, that the report is not far wrong in its conclusions and recommendations. This being the case, liquid food containing one-one hundredth of a grain of arsenic per gallon is dangerous even to adults. What then shall we say of the plight of the poor people of the Deer Lodge Valley who were obliged to nourish their babies with milk that might contain one-fifth to one-third of a grain of arsenic per gallon, or from 20 to 33 times the quantity that was regarded by the Royal Commission as dangerous.

THE OPINION OF THE COURT.

In his opinion in this case, Judge Hunt said (31):

“Let us now briefly inquire into the conditions of animal life upon the farms within a few miles of the smelter. After the

Washoe smelter commenced to operate many horses that were in pastures in the valley suffered from sore noses. The sore nose was observed in some horses on the Bliss ranch. Stated in ordinary language, the sore nose ailment consists of a sort of ulcer, from one to three inches in length, on the septum in the direction of the upper lip, and appears as if it was produced by a burn, or an irritating medicinal blister, or acid, the ulcer often containing a large piece of dead skin tissue, in a few instances involving the lining membrane of the nose, and penetrating the partition between the nostrils. The horses affected, generally speaking, also had garlicky breaths, rough coats, and suffered from diarrhoea; some were thin, some were quite easily exhausted, and many appeared to be unthrifty. The ulcers would heal with ordinary stable care, and the animal would nearly always recover if taken away from the valley pastures. Numbers of horses so affected were killed for examination, and post mortem investigations disclosed lesions affecting the stomach, intestines, liver, kidneys, spleen, heart, respiratory organs, and membranes of the brain. Chemical analyses of certain animal tissues were also made by experts, and more or less arsenic trioxide found. Many cattle also were affected. None of the cattle had sore noses. Witnesses say that this was because cattle can clean their nostrils with their tongues, while horses cannot. Some of the symptoms manifested in cattle were garlicky breaths, rough coats, coughs, tucked up bellies, scouring and drooling. Eliminating the sore nose, the lesions found in the cattle after death were generally similar to those found in the horses. In one of a number of steers that had been kept by defendants for experimental purposes on the Bliss pastures, which was killed for examination by Dr. Formad, of the government service, there were found vascular changes, epithelial changes, and connective tissue changes, which were evidently caused by an irritant poison.

“By again reasoning from facts seen and testified to by plain witnesses, and weighing what things were so actually seen with what experts have said, and with what experiments have been made, out of the mass of evidence, I must conclude that the lesions observed were caused by the irritant or corrosive poison arsenic.

This arsenic was deposited, to a greater or lesser extent, upon the foddors of the pastures, and when ingested by live stock, caused ailment and sickness. The most rational view is that the volume of the smoke stream, with its arsenic contents, is at times carried by air currents upon the lands adjacent to the smelter; that sometimes the volume is much more dense than at other times, depending upon atmospheric conditions, but that when the smoke is dense and low, there is a precipitation of more or less arsenic upon the fields, and that a sufficient quantity is precipitated to poison the pastures, so that animals feeding thereon are poisoned. Naturally, owing to variable winds, there is no rule of distribution of the smoke, so that there is no uniform extent of the results of the smoke upon animal life. Hundreds of animals which grazed in the vicinity near the smelter have never shown the slightest symptoms of poison; cows in the city of Anaconda have thrived in the highest degree; perhaps but a few animals, out of a large number grazing in the same field, have been affected at all—yet, after all, when the facts, as well as expert opinions, are assembled and harmonized, the strength of the whole proof is such that it practically excludes any general cause for animal unthriftiness other than arsenical poisoning.

“ But, while the conclusion just reached is the only accurate one under the evidence, still, it must not be taken that it was arrived at without overruling a strong challenge to every single issue pertaining to live stock conditions. To some of these matters, it is proper to advert briefly. For instance, it is not to be inferred that the complainant has sustained his contention that the sickness in animals has been fatal, or that it has been so general through the Deer Lodge Valley as to make the raising of live stock either impossible or unprofitable in all parts thereof. Complainant called as witnesses less than half of the farmers in the farmers’ association, whereas defendants introduced the testimony of a number of farmers, not members of the association, who have lived for years in the vicinity of the smelter, within the so-called ‘ smoke one’ (smoke zone?), and who said that they had no trouble with their stock or crops since 1903, and that their ranches were profitable. Nor can it be doubted that upon the cross examination of

many of the complainant's witnesses, it was developed that there has been not a little confusion between live stock conditions which existed prior to 1903, and those that have existed since. These dates are most material, because, without doubt, great damage was done by the smoke before 1903 (partly to remove the cause of which the smelter was remodeled, and the high stack built), and because the gist of the present suit is to close the smelter to prevent future damage reasonably certain to continue.

"It would appear, too, as showing that the sickness is not fatal, that, notwithstanding the somewhat abnormal condition of animal life that has existed since 1903, the percentage of death rate among live stock through the valley in 1906, was normal, in that out of about 9,384 head of cattle and 1,632 horses accounted for, the total loss was 54 cattle and 38 horses. Animals seem to sicken slowly, and often fail to show their true condition without careful examination."

Thus, while admitting the general poisoning, the Court was not inclined to admit that the losses were such as to make the raising of live stock impossible or unprofitable in all parts of the valley. The reason for this skepticism as to severe losses appears to be partly the "strong challenge to every single issue pertaining to live stock conditions," which the writer can confirm, and which was made with all the skill of the numerous experts employed by the smelter company, the testimony being welded together by able lawyers, and, in addition to this, certain statistics as to the death rate during 1906. It should be remembered, however, that the experts of both parties to the suit were actively searching for animals showing symptoms of disease during the greater part of the year, and that those which were found were sacrificed for examination, and, consequently, did not enter into these statistics; also, that the farmers had learned to watch their animals, and when they showed symptoms of poisoning they were given the best hay or purchased food.

The conclusion of the Judge that the "animals seem to sicken slowly, and often fail to show their true condition without careful examination" agrees with the observation of the writer with regard to the animals as a whole, but it seems to the writer that,

owing to the conflicting testimony, the Court was not able to appreciate the full extent of the damage to the live stock from the chronic but non-fatal poisoning. All of the farmers interviewed by the writer were reducing their stock of animals and asserted that it would be better for them (the owners) if a considerable proportion of their animals died, as living they were of no value, but, nevertheless, must be given extra attention and extra feed.

Then, there was the great difficulty of producing young stock, of which practically all of the farmers complained. The insertion of a few of the notes made at the time the farmers were interviewed, generally on their ranches, will give an idea of this source of loss.

Matthew Smith said: "When the new stack went into operation, I had about 40 head of horses and 12 milch cows. Have lost since then 8 horses and 7 cows. I have now 1 cow (bought last fall) and 7 horses. The remainder of the cows were sold because they did not become pregnant or did not raise their calves, I have had about 5 mares all the time and have bred them every year, but have not raised a colt since the big stack has been in use. Some of the mares failed to get with foal, others dropped dead foals, and in some cases a living foal was born but died in a few weeks. There are six of the horses now with sore noses. It is impossible to raise stock successfully. I am unable to raise enough colts to keep in work stock and what I have are worthless. The ranch is 11 miles northeast of Anaconda."

N. A. Liffing said: "At the time the big stack went into operation, I had about 100 head of cattle and 22 horses. Have lost only 4 or 5 grown cattle, but went out of the cattle business because they would not breed and I could not make good beef of the animals that I had. I now have 11 head of horses altogether, including 5 mares which were bred last year and which produced only one colt. Some of the mares were bred as high as fifteen times without becoming pregnant. In 1905 I had 5 mares and raised 1 colt. Have only lost one grown mare since the stack has been in operation, but it is necessary to give more care to the horses than formerly, to keep them in corrales and feed them.

For these reasons I had to go out of the stock business, and nearly all of the ranchmen in this vicinity have got rid of their stock."

Mr. Liffing and Smith Cosens agreed to the following statement: "Formerly the increase of stock was supposed to pay for the hay that it was necessary to feed, but for several years there has been practically no increase; and formerly $\frac{1}{2}$ to 1 ton of hay would winter a cow, but now it requires twice as much; nevertheless, there is more grass now than then."

L. E. Cosens said: "This year from 4 mares served there was produced 1 colt, and from 18 cows, 8 calves. Some of the females failed to become pregnant, others aborted. There are now 9 head of horses, all with sore noses."

The writer made notes of the conditions at nearly all the ranches he visited, but they were practically repetitions of the statements made in those just given. All agreed that it was very difficult or impossible to produce and raise calves and colts, that the older animals required about twice as much hay as formerly, that the cattle did not take on flesh well and the horses were weak and of little value. For instance, Jerry Ryan said he had in 1906 a team of horses coming four years old, one-fourth Percheron and one-half Hackney, weighing about 1,000 pounds each. They were not thriving on his hay and he concluded to sell them. When he tried them at the time of sale they were so weak and lacking in wind that he could only get thirty-five dollars each for them.

Dr. Formad, who made investigations for the Government, obtained statements from 49 persons showing that whereas the holdings of horses by these ranchmen in 1902 were 2,447, they had been reduced by 1906 to 423, and their losses of cattle were even greater. "The decrease was said to be due almost entirely to deaths, as on account of the unthrifty condition of the animals there was practically no sale for them. Three men who undertook to raise sheep went out of the business, and five other ranchers also left the valley on account of their losses during this period" (32).

It seemed to the writer, and he so expressed himself to the farmers and their attorneys, that the evidence as to losses from these several causes was not collected and presented to the Court

in as clear a manner as it might have been. Possibly, it was because of a lack of proper attention to this part of the case that the judge was not more impressed with the magnitude of the losses.

The farmers in their suit "prayed for a permanent injunction forever restraining and enjoining the defendants from operating a certain smelting plant situated near the city of Anaconda, Mont., and from treating ores described as containing poisonous and deleterious substances, and for general relief."

The paramount reasons for denying this prayer seem to be expressed in the following quotations from the "opinion" (33):

"Bliss will not be driven from his home if the operation of the smelter is not enjoined, for he never has made his home on his land, and never intends to—that is to say, there is no sentimental concern involved; there is not and will not be personal inconvenience or physical discomfort, or even annoyance, to him or his family on account of the smelter fumes. To him, the special damage which he has suffered or will suffer is an absolute pecuniary matter. Of such as he has suffered in the past, there could be exact ascertainment, and, for recovery thereof, there appears to be no reason why he cannot bring his action at law with trial before a jury, and obtain a verdict and judgment.

"Finally, in the last analysis, when, in connection with the attitude of Mr. Bliss, direct and vicarious, we weigh the uncertainty of his proof as to the amount of past damages done to his land, or of future damages to be done to his pastures by the acts of these defendants, together with the fact that he has not resorted to a court of law to recover any damages at all, and balance these matters against the stern fact that if the defendants are enjoined as prayed for, they must either buy the lands of the farmers at their own prices, or sacrifice their property; that, if enjoined as prayed for, their smelter must close; that, if it does close, their business and great property will be practically ruined; that a major part of the sulphide copper ores of Butte cannot be treated elsewhere within this state; that thousands of defendants' employees will have to be discharged; that the cities of Anaconda and Butte will be injured irreparably by the general effect upon internal commerce and business of all kinds; that professional

men, banks, business men, working people, hotels, stores and railroads will be so vitally affected as to cause unprecedented depression in the most populous part of the state; that the county government of one county of the state may not be able to exist; that the farmers of the valleys adjacent to Butte and Anaconda will not have nearly as good markets as they have enjoyed; that the industry of smelting copper sulphide ores will be driven from the state; and that values of many kinds of property will either be practically destroyed or seriously injured—remembering always, that the courts of law are open to Mr. Bliss—I hold that, under the evidence, as he has submitted his case, discretion, wisely, imperatively guided, by the spirit of justice, does not demand that injunction, as prayed for, should issue.”

And thus ended what was, perhaps, the greatest contest in veterinary toxicology that has ever been heard, and the farmers lost their case, but not because of failure to prove the fact of poisoning.

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AUTOTHERAPY—ITS APPLICATION IN THE TREATMENT OF SEPTIC DISEASES IN THE HORSE.*

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I hope I will be pardoned for attempting to handle such a formidable subject as vaccine therapy; and if my efforts to elucidate the action of autogenous pus when administered internally in septic diseases in the horse will interest you sufficiently to give this treatment a fair trial, I will feel amply repaid for any criticism which my lack of completeness is justly entitled to.

According to Wright, when an individual recovers spontaneously from a bacterial infection, the cure is the result of the production of immunizing substances within the body fluids, evoked by the setting free of bacteria and their products from the focus of infection into the body; to this process Wright gives the name of "Autoinoculation."

We all know that opsonins are always present in healthy serum, and that phagocytes ingest and destroy invading bacteria, but are able to do this only after the bacteria have been acted upon by the opsonins.

Immunity according to this theory depends upon phagocytosis, and phagocytosis depends upon opsonins. Obviously, then, the degree of immunity depends upon the opsonic content of the blood. Later, it has been shown that the opsonins normally present are not the same as those developed in the production of immunity to a certain disease; *i. e.*, staphylococcus opsonins, developing as a result of a staphylococcus infection or resulting from the inoculation of a staphylococcus bacterin, prepare only staphylococci for ingestion by the phagocytes.

Streptococcus opsonins prepare only streptococci, etc. The opsonins normally present show no such specific action, but act upon all bacteria in much the same way.

*Read before the June meeting, Veterinary Medical Association of New York City.

It has been readily shown by absorption tests that opsonins act upon *the bacteria* and not by stimulating the phagocytes to increase activity; also by comparative tests, that the opsonic and bactericidal power of the blood serum in an infection do not run parallel, and therefore are distinct entities.

The present day management of bacterial infections, outside of hygiene, sanitation, etc., is summed up in one word, immunity. Immunity means not only the non-susceptibility of an individual to a given disease and the power to resist the infection, but also the mechanism by means of which a cure is effected.

There are two forms of immunity, passive and active. Passive immunity is produced by injecting protective substances manufactured in the body of another animal; antitoxins. The diseases caused by bacteria that produce soluble extra-cellular toxins in their growth are the only ones from which antitoxins are made.

Most bacteria produce intra-cellular toxins, the toxins being bound up in the bodies of the bacteria.

Active immunity is the immunity induced by the production of immune or protective substances within the individual. This is the form of immunity with which we here will deal. Wright's method of treating infectious diseases by small infrequent injections of sterile bacterial vaccines consisting of the organisms causing the disease has to a great extent revolutionized the treatment of bacterial diseases. Just how and why it acts, we may not be able to tell. We know it stimulates the immunizing apparatus into activity and that we are copying nature's own methods; that is the spontaneous cure of infectious diseases by autoinoculations.

Massage, cupping, counter-irritation, Bier's hyperemic treatment, hot and cold applications and many other forms of treatment act in this way, namely, increasing autoinoculation. This gives an ideal explanation of the beneficial results obtained in the application of mustard to the chest in pneumonia cases, where the infecting agent, with the products of its metabolism congregates in the lungs. This is really a form of natural autotherapy, or so-called autoinoculation. Injection of bacterial substances stimulates the body cells to produce the protective agents.

In case the patient has not sufficient vitality to react, the immunizing substances are not produced and the treatment fails; therefore, the earlier in the disease they are given the better will be the results. They should not be left as a last resort when the individual's vitality is exhausted.

In certain localized infections the body absorbs but little of the products of bacterial growths or antigens. Therefore, the amount of antigen absorbed being small, the amount of active immunity produced is slight. That is, little of the specific opsonins are formed, and those normally present are, to a large extent, used up so that the opsonic index is low and the disease tends to become chronic, or the part infected may be so badly damaged by the severity of the infection that the surrounding tissues are unable to react and form the necessary opsonins. In this case the inoculation of the corresponding bacterial antigen into a part distant from the site of infection where the tissues are injured is followed by an abundant elaboration of the specific opsonins which are delivered to the blood current, are taken to the infected part and reinforce the infected tissues in their fight against the invading bacteria. Again, the whole system may be overwhelmed by general bacterial infection so that the specific opsonins formed and those normally present are rapidly used up. Hence the opsonic index is very low and the body is helpless to resist the infection. Here it has been proved in many cases in human medicine that the subcutaneous injection of carefully graded doses of the corresponding bacterial antigen can increase the specific opsonins. For it is the connective tissues and particularly the loose cellular subcutaneous connective tissues that are, as a rule, the most active in the production of the anti bodies.

Bacterial antigens should *never be given intravenously*, for there they would never increase opsonins. When injected into the body the proper place is in the above described tissues; distant from the focus of the disease and uninjured, they are better able to respond to the stimulus.

Dr. Charles H. Duncan, of this city, has demonstrated that the administration of the crude autogenous pus per os will stimu-

late the manufacture of opsonins and bactericidal substances within the body fluids, as well, if not better, than the injection subcutaneously of autogenous vaccine. He has also shown that subcutaneous injections of the filtrable toxins will also give the same results.

This method of treating infectious diseases, of which he is the originator, has been called by him, and properly too, "auto-therapy." The advantages of this treatment over autogenous vaccines at once clearly are manifested. It does away with the preparation of autogenous vaccines which, in addition to being tedious, is also expensive; likewise if this treatment is adopted it will dispense with the present hit and miss stock vaccines that are now in vogue.

There are many strains of each great group of bacteria. Some one has estimated that there are probably as many as seventy different strains of streptococci, and nearly as many different strains of the colon group, etc., so in using a stock vaccine it is readily seen what a small chance there is of getting the same strain of bacteria as the one causing the infection.

Many infections are mixed, and one is unable to determine which is the principal offending organism in order to administer a corresponding stock vaccine. But an autogenous antigen is obtained by the administration of the crude discharge, either in the mouth, or injections subcutaneously of the filtered toxins, enzymes, etc., of the discharge.

This is a natural vaccine and in giving it by these methods we are applying artificial autoinoculation which is the secret of the cure of infectious diseases.

My best results have been confined principally in cases of infections due to pyogenic bacteria, but its application promises to cover a large field of infections, and, that primarily, is the reason of my presenting the subject after such a limited experience with it, so as to enable others to determine to their satisfaction its efficacy in the treatment of infectious diseases in the horse.

In the light of our present knowledge of the defensive forces of the body fluids, any criticism of this method as crude, is un-

justifiable. This method is based upon a well-known scientific interpretation of autoinoculation in the spontaneous cure of infectious diseases. The brilliant results that I have witnessed after the application of this treatment has made me feel that to ignore it in pyogenic infections would be nothing short of criminal neglect on my part.

We may assist in bringing about a natural cure, or, in other words, specific antibodies may be developed, by direct inoculation, or by placing the autogenous toxic substances, developed during the course of the disease, directly into healthy tissues. This is the autotherapeutic method of cure.

Duncan's definition of autotherapy is: *That therapy which employs all of the autogenous nascent, toxic substances developed during the course of the disease against which the tissues react in a curative manner.*

The reaction against these toxic substances is the reaction against the disease.

When the infecting agents have been changed by growing in a *culture media outside of the body tissues or by time*, their therapeutic value is lessened in proportion to the change that takes place in them by the *various processes* which they undergo.

Duncan has proven that in extra-alimentary and extra-pulmonary diseases, if the toxic product of the disease is placed in the mouth it will tend to develop specific anti-bodies, and in intra-alimentary and intra-pulmonary diseases, if the toxic products of the disease be placed in healthy tissues outside of these systems, it will tend to develop specific anti-bodies. It must be remembered that it is healthy tissues that develop specific anti-bodies. It is desirable to autoinoculate in many diseases; just how many, clinical experience alone will tell.

Pus contains all the toxic products of tissue changes, enzymes, ferments, and chemical changes in the protoplasmic molecule, against which the healthy tissues react in a curative manner. Besides *the pus and necrotic tissues being the ideal culture media*, they contain the toxic substances derived from the causative bacteria.

It has been shown when bacteria are in the blood stream (as it is claimed, bacteria have been found there in rheumatism in man), they develop few anti-bodies, but when injected subcutaneously they develop many anti-bodies.

Duncan likens autotherapy to a two-edged sword. It is doubly useful if handled by intelligence, but great harm may be done in the hands of the ignorant and careless. Autotherapy is not a cure-all; neither is any other therapy.

I have administered the crude pus to horses by three different methods.

First Method.—One c.c. to 3 c.c. of pus (necrotic tissue) depending upon the density of the discharge to 20 c.c. or 30 c.c. of water, mixed well in test tube, pass through a bunsen or alcohol flame until the solution begins to show a coagulation or curdling of its contents, then filter through a triple layer of sterile gauze; add one drop of phenol; 1.5 c.c. to 2.5 c.c. of the filtrate would be injected into the loose cellular tissue in the pectoral-axillary region. The dose graded according to the condition of the animal. The second dose not to be given for at least 48 hours, depending upon the clinical symptoms of the case; seldom would I administer the second dose in less than four days.

Second Method.—One tablespoonful (15 c.c.) of pus (if not enough pus collected can use the necrotic tissue, which is obtainable by scraping the parts), add enough water to make 6 oz. (180 c.c.), mixed thoroughly, and it is advisable to dispense it in a brown container so that the attendants do not become familiar with the contents. Give 1 oz. (30 c.c.) every hour until four doses are taken. Repeat if necessary the same dosage from three to six days later. In the meantime collect and save as much discharge from the wounds as possible, so as to be provided for future dosage.

Third Method.—One c.c. to 3 c.c. of pus, depending upon its density, to 20 c.c. or 30 c.c. of water, shake well and permit the container to remain at about room temperature for eight to twelve

hours, during that time give it an occasional vigorous shaking. Then place the mixture in a Berkefield filter (No. 3-N-Med).

The filtrate contains only the toxic material of the bacteria and diseased tissues in solution. Our text books tell us that most micro-organisms are endotoxic in character, but the use of the filter shows that the bacteria in the pus mixture permits a large quantity of their toxins to escape.

One c.c. to 2.5 c.c. is the dose to be injected in the above described regions, and to be repeated according to the indications and progress of the case.

The last two methods are according to Dr. Duncan's instructions and are the two I would suggest to be adopted. The first method is unreliable unless great care is exercised in its preparation. If it receives too much heat it is useless and too little heat it is dangerous. Possibly in a water bath for about two hours at a temperature of 60 degrees C. may be a good way to prepare the pus for injecting.

A dose of the autogenous antigen may be followed by a mild "negative phase" lasting hardly over 24 hours to be followed in turn by a "positive phase" extending over several days. A proper sized dose will be followed by the transitory "negative phase" and then the "positive phase," which may last for several days.

The lesions so to speak are flushed with blood and an increased flow of lymph during this moderate "negative phase" when these substances carry a greater quantity of the protective agents of the body fluids, hence healing results.

A dose of autogenous antigen may do damage to an organism that has experienced numerous autoinoculations and is in a condition of constant "negative phase." If administered at all, only in the smallest doses, well diluted, may any help be hoped for in such cases.

Vaccines aid only in cases which have the necessary power to react to their stimulus.

In a hyperplastic area surrounding a suppurating focus, or located in a joint the opsonins and anti-bacterial substances in the

blood do not have free access. Any agency that will increase the local blood supply is indicated.

When the beneficial effects of the first dose or treatment of the autogenous antigen is passing off, then it is time for another dose or treatment.

It is well to remember that as recovery progresses, intervals between the application of the treatment are gradually lengthened.

Most vaccine-therapists have discarded the opsonic count and rely entirely on careful observations of the clinical signs as the indicators for dosage.

The most important point to be remembered is that the earliest application of the vaccine or antigen will give the greatest number of cures, and as their administration does no harm, one should not hesitate even if the septic condition appears insignificant, particularly in our class of patients. If we wait until a pronounced permanent "negative phase" develops and the animal is in a generalized septic state, our results will not be very successful, but nevertheless hope should not be abandoned; the antigen may be administered in a very small, highly diluted doses, at very short intervals.

The recital of case reports are, as a rule, very tiresome and unsatisfactory to the listeners, but I ask you to bear with me for a short time while I relate briefly the results obtained in some cases that covered a wide field of infection.

Case No. 1.—Gray gelding of the draft type, having a large fluctuating fistulous abscess on the right side of the withers. Two doses of the heated pus were administered subcutaneously, the first given on October the 18th, and the second on October the 22d, 1911. The discharge took on a sero-sanguineous aspect the following day after the first injection. The animal made a complete recovery within two weeks. No microscopical examination was made of the discharge.

Case No. 2.—Bay gelding showing a very severe infection of fore point of the fetlock on the off fore leg. Microscopical examination revealed the presence of the necrophorus bacilli, streptococci and staphylococci. Multiple abscesses were forming

around the joint and extending to the knee. Animal in great pain, places no weight on limb, temperature very high, the condition going rapidly beyond control. Four doses of the heated pus were injected subcutaneously. On December the 10th, 12th, 17th and 24th, 1911, respectively. The improvement was remarkable after the second dose; and the animal was ready for work in a month. Following the second dose the parts were actually bathed with lymph and had the appearance of liquid vaseline.

Case No. 3.—Black gelding having a generalized necrotic and abscess formation around the coronet and in the hollow of the fetlock due to a punctured wound in the frog. Five doses in all of the heated pus were injected, covering a period from December the 21st, 1911, to January the 12th, 1912. After the first dose the parts took on a flushed appearance and began to heal rapidly. Unfortunately the flexor pedis tendon had necrosed before the treatment was begun and had ruptured. Although healing was complete the animal was destroyed. The microscope showed the same infecting agents as case No. 2.

Case No. 4.—Gray gelding. Microscope shows the same micro organisms as in case No. 2, and clinically and etiologically is the same as case No. 3; receiving five injections of heated pus, making a complete recovery in six weeks.

Case No. 5.—Dr. W. J. Magee's case. Bay gelding, showing a profound infection of the off fore foot and large necrotic areas. Microscope showed the smear covered with necrophorus bacilli, streptococci, staphylococci, and what appeared to be the bacilli pyocyaneus. This case was treated with the heated pus and Dr. Magee was very favorably impressed with the results after the first dose, although the animal died. Dr. Magee attributes the death to the too frequent injections, bringing on a permanent "negative phase."

Case No. 6.—Buckskin gelding, the microscope showed a streptococcic infection of a wound on the hind quarters, that had become infected by using the same syringe in injecting it that had been used on a distemper abscess on another horse. This animal at the time of the treatment was in a prolonged "negative phase,"

showing numerous abscesses in different parts of the body. The injection of heated pus in small doses did not influence the course of the disease and the animal died from sepsis.

Case No. 7.—Bay gelding, brewery draft horse, suffering from a nail prick that had caused a separation around the coronet, great pain, high fever, no weight on foot. No microscopical examination of the discharge was made. This case took four doses of the heated pus before recovery became complete in five weeks.

Case No. 8.—Bay gelding; coronet, pastern and fetlock, one suppurating mass due to a punctured wound in foot. Discharge of purulent synovia from original wound. No microscopical examination made. This case was fed with the purulent discharge from the leg and all the suppurating and necrotic areas began to heal, and parts were perfectly healed in five weeks, except a slight discharge of non-purulent synovia from the bottom of the hoof. All the digital articulations had become ankylosed and the animal was destroyed.

Case No. 9.—Gray gelding, a deep punctured wound reaching down to the coxofemoral articulation; yielded very rapidly to the administration of the crude pus per os.

Case No. 10.—Gray gelding, of a large heavy draft type, cellulitis of the entire right hind leg, apparently starting from a calloused area on the anterior surface of the pastern. The part was washed and hair clipped and a moist antiseptic dressing applied for twenty-four hours. Then the callous was raised off completely and the pure pus caught in a wide mouth bottle. A pure strain of streptococci was shown under the microscope. This discharge was filtered through the Berkefeld filter and only two injections were necessary to bring about a cure.

Case No. 11.—Gray mare (green), had been suffering from a very severe attack of influenza of the fulminating type. The attack under the regular treatment ran a very tedious course, until finally the temperature remained stationary at 102 degrees F., pulse 60, and the animal refused to eat or drink and was in this condition for three days, when small petechia appeared in the left nostril; eight distinct petechia were counted. In the right

nostril there was not so many. Along the abdomen were several oedematous patches about the size of a man's fist. The symptoms were undoubtedly those of purpura hemorrhagica in the initial stage. The animal was injected subcutaneously with 2.5 c.c. of the filtrate of the discharge from case No. 10. The next day the condition of the animal was wonderful, temperature normal, petechia and oedematous swellings completely disappeared. Animal drank a pail of water and ate one quart of oats. A second dose was given four days later and the animal made a rapid recovery.

Case No. 12.—Dark gray gelding, having a fistula of the withers of four weeks' standing. The parts were washed with plain tap water and the next morning two tablespoonfuls of pus was collected and enough water added to make 12 oz. of the mixture. One ounce was given in the mouth every hour, until four doses were taken. By mistake the same number of doses were administered the next day but without any harm being done. The day following the first treatment, the discharge had changed to a decided bloody serous exudation and about two drams was all that could be expressed from the fistulas tract; the second day only a few bubbles of the discharge could be forced out, in comparison to the two ounces on the morning on which the treatment was commenced. The animal made complete recovery in three weeks. No microscopical examination was made of this discharge. Four treatments were all that was necessary in this case.

Concluding Remarks.—Strong antiseptic and astringent solutions are contraindicated, as a rule, when the autogenous antigen is being used, because such agents retard the outflow of lymph and blood which follows their use. Lymphogogues may be used in the place of such solutions. Sod. chloride four per cent. and sod. citrate one per cent. in boiled water is a good lymphogogue.

Generally speaking the more severe the systemic infection the smaller should be the dose of antigen employed. Where very small doses are given, they may be given more often; in some cases daily minute doses being employed. When large doses are given the intervals between them should be lengthened. Finally

too much should not be expected from this treatment and it must not be considered as a cure-all.

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THE ANNUAL MIDSUMMER MEETING OF THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION will be held at the State Farm, Springfield, July 9. A very enjoyable and profitable gathering is anticipated, and from what we have seen of Illinois meetings, will be realized.

THE MINNESOTA STATE VETERINARY ASSOCIATION will hold its next meeting at Minneapolis, July 10 and 11. The success of the meetings of this association are assured in advance, as its members are interested and active, and its secretary thoroughly alive to its every requirement.

THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY will hold its mid-summer meeting at the Columbian Club, 441 Jersey Avenue, Jersey City, on Thursday, July 11. There will be three sessions; morning, devoted to clinic; afternoon and evening sessions devoted to reading and discussion of papers. Clinical material is said to be in abundance, and this feature of the meeting promises to be better than usual. Secretary Loblein has set about to make this a banner meeting, and thirty days prior to its date was in a position to announce the following names of gentlemen who will contribute to the literary programme: Drs. P. K. Nichols, Staten Island; H. E. Stearns, Arlington, N. J.; James McDonough, Montclair, N. J.; John V. Laddey, Newark, N. J.; Thos. B. Rogers, Woodbury, N. J.; Chas. E. Clayton, W. Reid Blair and David W. Cochran, New York City. Others will be added later. A general invitation was extended to the members of the Veterinary Medical Association of New York City to attend the meeting by Dr. J. T. Glennen, Newark, at the June meeting of the New York City Association, and we predict the attendance of a large percentage of them.

THE PENNSYLVANIA STATE BOARD OF VETERINARY MEDICAL EXAMINERS, ITS WORK AND ITS NEEDS.*

BY JACOB HELMER, D.V.S., SCRANTON, PA.

In the development of veterinary medicine and surgery, animal hygiene, meat and milk inspection, protective sanitary legislation, and in the enforcement of laws governing veterinary practice, Pennsylvania ranks second to no other state, and along a few lines of progress she stands alone in the foreground.

Thirty years ago, graduated veterinary surgeons were few and were to be found almost wholly in large cities and towns. Opportunities for veterinary education at that time were few and the college curriculum very deficient.

In 1882 a few practitioners in Philadelphia met and formed a corporate society known as the State Veterinary Medical Association, and thus began the organization of the profession in Pennsylvania. Subsequently, the Keystone Association was formed and county organizations in the more thickly populated sections throughout the state. Simultaneously with this progress, new veterinary schools began to make their appearance, the veterinary department of the University having been established in 1883. At that time the title of Veterinary Surgeon was comparatively little used, although the title of V.S. or D.V.S. was given by the few veterinary schools then in operation. A man who treated animals was among laymen generally known as a Horse Doctor. While this is true to-day, yet it is much less so, and the change began with the introduction of laws calculated to govern and protect the profession and practice of veterinary medicine and surgery.

To organize the profession and to pass laws to safeguard and protect all its interests was the first work of the State Association. In other words; to define who should and who should not

* Read before the Pennsylvania State Veterinary Medical Association, Philadelphia, March, 1912.

be allowed to practice. It is true that at that time there were regular practitioners, non-graduates, men who had learned the art from practice supplemented by such scanty literature as it was their good fortune to find, and it is also true that there were many who made a part of their living by practice and many more who helped their neighbors in a community, generally without any remuneration.

In proceeding to pass suitable protective legislation, it soon became evident, and it was perfectly natural, that there should be two interested parties, one the party of graduates entering the field, the other the party of those who had honestly practiced the profession and secured a livelihood by it. Evidently it would have been unjust, even had it been possible, to obtain protective legislation without including the latter class of veterinary surgeons. As a result of a compromise, these were allowed to use the title of veterinary surgeon or analogous title, providing they had gained from it a livelihood for five years previous to the passage of the first Act, namely in 1889. This law is known as the law of 1889.

The next important step was to provide for registration of all men in the state legally entitled to register, and a registration book of record was placed with the prothonotary of every county. At this juncture a startling condition appeared. No sooner was it generally known that men could register as veterinary surgeons than many, without any such qualifications as were demanded, presented themselves and succeeded in registering on their personal affidavits. After a period of nine months the registration books were supposed to be closed, but in some counties no regard was paid to this by the prothonotary, the fee was taken and the applicant registered as before. But, in some instances, registration being refused, some applicants through political power succeeded in having the books reopened for a short period, and this opening and closing of the books continued until 1905, when the State Board was formed and registration placed wholly in its power and discretion on the fulfillment of certain fixed conditions.

It is evident that the creation of a State Board at this time was natural and was wholly the result of necessity because up to this time protective legislation had proven a farce, since hundreds of illegal registrations appeared upon the books. To prohibit illegal registration was, however, only one of the functions of the Board. Its work was to take a higher and a wider range. It was vested with legal power to conduct the examination of graduates as to their qualifications in stated branches, to pass upon diplomas and to require a three instead of a two-year veterinary course, to issue a license, to attach the seal of the state, to record licenses and to keep a book of registration containing the names of all legal practitioners. Incidentally, State Boards like this have influence to raise the standard of veterinary education throughout the country, to cause the adoption of better college curriculums and more thorough instruction in the branches taught, and to regulate the moving of practitioners from state to state. It has the opportunity of becoming acquainted with every practitioner in the commonwealth and to enlist his interest and co-operation. In other words, to unify the profession in spirit and aim, thus making it a ready power to act as a unit against things inimical to its interests or to promote general welfare. Unity in a profession is a great power, and we could have bestowed upon us no greater blessings than unity and harmony. Our Board voices the sentiments of the profession; is its attorney and labors uniformly for its elevation. Its work (unless abnormal) is wholly of a constructive character, and it is a bulwark of the profession.

The number of State Boards is rapidly increasing. One by one the states are falling in line. Each state adopting such a course does something tangible to better veterinary education. Eventually graduates from all schools must compete for a license. Naturally State Boards are anxious to protect the profession and by mutual agreement between them the good of the profession will not be difficult.

Thus State Boards are a powerful factor in all questions of

educational growth and legislation affecting the future of the veterinary profession in the state and nation.

The scope and usefulness of the veterinary profession is not sufficiently comprehended even by the majority of veterinarians. It presents a vast field for observation, experiment and discovery. The intimate relation of this branch of medicine to the larger live stock and dairy interests of this country; to the science of the production of improved breeds in all classes of the domestic animals, the study of foods and feeding to secure better results; the problem of the production of force and the conservation of energy in all classes of draught animals; the care of the domestic animals in health and disease; the study of the control and eradication of contagious and infectious plagues so destructive to animal life and property; the fact that certain animal diseases are communicable to the human family and that diseases may be spread through the medium of meat and milk; the question of the cleanliness of animal food products, as well as their freedom from disease taint; the problem of the production of the best quality of animal food calculated to nourish and sustain human life; the contribution the veterinary profession is capable of making to solve the problem of the production of higher grade and more intelligent animals either for work or to afford pleasure, make plain the question why the existence and proper enforcement of wholesome laws to protect this important field of observation and work are a paramount necessity.

The State Board of Veterinary Medical Examiners of Pennsylvania was organized nearly seventeen years ago. Has it accomplished anything? Institutions, like individuals, either go forward or backward. The moment no advancement is made the law of retrogression begins to assert itself.

The Board has uniformly and conscientiously, during all these years, fulfilled the duties for which it was created. It has been aggressive and enforced the law without fear or favor. It has won difficult cases in the courts and obtained legal decisions on obscure points that tend to render more clear the meaning of the law, recognizing it as sound in principle and

practice and establishing it upon a permanent basis. These laws have not been altered or changed, but the scope of their usefulness has been extended. The recent re-registration act of 1909 is a notable example of such extension. It is a credit to the profession that among other things the re-registration act furnished the Board with sinews of war and made it possible to accomplish what could not have been done without this aid. Pecuniary aid from the State of Pennsylvania Veterinary Medical Association has always been a compliment to the Board and a guarantee that you fully believed in its efficiency.

The Board has found from year to year a larger number of graduates presenting themselves for examination and to receive the license to practice in the state. It has prepared a directory containing the names of all the legally qualified practitioners, and in this directory, among other matters of interest, are all the laws as they were enacted from time to time, governing the practice of veterinary medicine and surgery in Pennsylvania.

The Board, through its Secretary, has conducted extensive correspondence with complainants and also those complained of as law-breakers. Suits against the latter have been instituted and pushed as rapidly as circumstances and means would permit.

The Board found itself at times in trying conditions, and if it has erred (for to err is human) it has been a mistake of the head rather than of the heart.

It is not at this time my purpose to eulogize the Board, but to point to the fact that in its work it has not been a mutual admiration society but a potent force to fulfill the responsibilities placed in its hands. In this connection it would be natural to infer that as our laws become older the necessity of enforcing them against illegal practitioners will become less and less. But the above is more true of the human medical profession than of the veterinary profession. There are yet a number of formidable aspirants knocking at the door for admission under the acts of 1889 and 1891, with whom we have to deal. Then there is a tendency to take the work of dentistry from the domain of veterinary surgery, thus making it a specialty that our present

laws would not reach. But the worst menace is comparatively a new one, viz., the invasion of the field by large numbers of men with correspondence school diplomas. Said diplomas are conferred for any price from ten dollars to fifty dollars, upon any and all applicants who answer printed questions with answers appended. To pass an examination the would-be student answers some of the questions given him without answers appended. The real object of the procedure is to get rich quick, but as there is no guaranteed value received, the scheme is basely fraudulent and an injustice not only to the student but to the public. Under existing protective laws this class of offenders can be easily reached and punished. Thus the work of prosecution of illegal practitioners is as much a necessity to-day as it was seventeen years ago and demonstrates that the profession cannot yet dispense with the active services of its Board of Veterinary Medical Examiners.

It is pertinent here to inquire whether the laws governing the practice of veterinary medicine and surgery in Pennsylvania can be reasonably modified or improved for the benefit of the profession. In section 9 of the laws of 1895 the power to prosecute is placed wholly in the hands of the Board. The Board shall be the prosecutor in each case. It has been suggested that any person concerned throughout the state should also be permitted to be a prosecutor. It is believed that this would lighten the burden of the Board in the matter of prosecution and be an economic factor in obtaining results without the expenditure of much money.

This plausible view, however, may rightly be regarded with more or less suspicion. No doubt the persons who framed that portion of our laws wisely discerned that a new law enforced by the public might be seriously injured or possibly killed by injudicious suits—suits based upon revenge, prejudice or hearsay. It appeared to the law-makers that more dignity would inure to the good of the profession if the State Board was prosecutor and that the effect of the prosecution would be more far-reaching. We cannot refrain from commending this view and

entertaining serious doubts as to the final success of any other method.

But, while we agree with and commend the law-makers, we feel that we may improve this part of the law by asking that the fines collected become the property of the Board for its use in prosecutions. Just at this time we would not advocate tampering with these laws but to seek their enforcement, except efforts as just stated, for the purpose of obtaining further financial help to promote the work of the Board. Further than this, and on the same lines, we would advocate making a powerful appeal in a proper manner and at the proper time, to the legislature of Pennsylvania for an annual appropriation of say five thousand dollars to defray the necessary expenses of the Board. It is quite certain that we would receive some substantial assistance, even though not the amount asked for. The appointment of an intelligent committee, including the State Veterinarian and others in position of influence, they backed by the profession of the state, bringing influence to bear upon all the legislators, would bring results.

When rightly considered, it is the right of this profession to ask for such necessary aid from the state, and we should not be timid, having in view the public good. We are members of the same family and children of the great state of Pennsylvania. Its law-makers are not our enemies but our friends. We placed them there, and we have a right to ask them, and they in turn fully appreciate their positions as public servants in this respect; moreover, they can readily understand the nature and necessity of such a request, and many of them, if not the majority, have such interests as ours at heart. Probably one-half of our legislators are from country districts. We have no right to complain of what our legislators have done for us because they have done so well. As proof, think of all the laws of the State Live Stock Sanitary Board, of a laboratory of substantial aid for a veterinary department in connection with the University of Pennsylvania, of the milk laws of years ago and the perfection of them ever since, of the progress of the question of pure milk in the

cities and towns and the country districts of our state, of the laws for the inspection of meat and meat products and the establishment of better and cleaner butcher shops and cleaner meat shops throughout the state. Remember the supreme effort made by a state to stamp out a recent plague introduced from across the sea.

When you stop to consider the conflicting opinions and the difficulties to be overcome you cannot form any other conclusion but that the representatives and senators, as a rule, have for years in Pennsylvania had our interests at heart and have done for us all in their power, and if they have not done more it may be our own fault. Personally, I feel grateful, and say all honor to them.

We have heard so much against politics and politicians. We have witnessed the conflict in the struggle for power of parties. Condemnation on every hand. But if you can show that no substantial gain has been made, then all the progress our profession (based upon legislation) has achieved is a myth and has no real existence, then as far as we are concerned it is possible that parties have been a detriment and an injury to us and to the states. But if we can point with just pride to our achievements assisted by the law-makers of Pennsylvania, then it follows that parties, so called, have not been a detriment to our profession.

The truth is, however, that in a democratic form of government, like ours, you can achieve nothing outside of politics. The Pennsylvania State Board of Veterinary Medical Examiners has recently in a way been reconstructed. Two members, the only politicians on the Board, have at the expiration of their terms been removed and two others appointed by the Governor to fill their places. This is not the first and only time such action has been taken in this state in similar matters or in any other state of the Union. Therefore, the action was not without precedent and was no doubt based upon a good reason. An unbridled tongue maketh enemies. This quotation to-day is as true as it was in the days of King Solomon.

I would not raise the question here were it not for an editorial

that appeared in the February number of the AMERICAN VETERINARY REVIEW entitled "Pennsylvania Points the Way," which editorial reflects unmistakably upon the character of the present Board.

By it the writer of the article has demeaned himself. He may, however, be deemed less culpable, possibly not knowing the facts. Nevertheless it appears that at least he assumed to know, nor did he hesitate to reflect discredit upon the Governor, the legislators, the State Board and the profession by saying "that a tottering political machine required more pliant men that sinister political influences might be better served." The language of the writer is not to be likened to the beaded bubbles that sparkle on the rim of the cup of justice and truth, but, on the contrary, it is an untrue and unwarranted stricture upon the character of the chief executive of Pennsylvania, upon our legislators and your Board of Veterinary Medical Examiners. Thoroughly considered, it appears to be wholly the morbid vapping of a deluded mind, based upon an article in the same number of the REVIEW entitled "A Letter to Governor Tener."

It would be a sign of innate weakness if the Board did not resent all such base insinuations. If our manhood, self-respect and political independence are to be preserved by such sophistry, Heaven help us.

If the above statement quoted from the editorial be true, then it is the immediate duty of the Board, recognizing the fact, to request its own dissolution.

Let me assure you, however, that the Board as to-day constituted is at least as good a Board as ever. Among other advantages, it will be less hampered in its deliberative functions by a similar bossism that the article first endeavors to create and then pretends to condemn. We emphatically do not share in the view that our chief executive and the men who place laws upon our statute books do not desire that said laws be enforced against law-breakers, and from our past experience we know that the Board will be sustained in the reasonable and just enforcement of these laws.

If other boards in other states have failed, the fact may not be necessarily due to bad politics but to the incompetency of any such board. One principle of the Pennsylvania State Board in the past has been to enforce the laws governing veterinary practice, more especially where no reasonable doubt exists in the premises, and in this attitude no doubt the present Board, as in the past, will be sustained by all right-thinking men. Further, the interests of the profession so far as they lie in the jurisdiction of the Board will be duly conserved and protected, and the profession as far as possible made a unit of strength for the promotion of its own interests and the related interests of the public.

In conclusion, the Board needs the continued support of the profession. It is plain that to prosecute offenders requires funds. I am confident that if we do not misbehave by foolishly calling our friends bouncers, killers and the like, with necessary and well-directed effort we can obtain state aid. This question the Association should pass upon to-day.

I trust that no serious harm has been done through unwise, as well as unjust criticisms that can possibly have but one effect, except in the broadest minds, viz., to stimulate indifference and antagonism. Sentiments destructive of the objects for which we have so long and so faithfully labored are not worthy of any. We therefore deprecate all expressions of personal feeling antagonistic to the state government where the interests of the entire profession are so deeply involved.

THE COLORADO VETERINARY MEDICAL ASSOCIATION held its semi-annual meeting at Fort Collins, May 31 and June 1. A large programme was enacted, and the gathering was a successful one. The secretary's report will appear in a subsequent issue.

DR. N. S. MAYO OF THE VIRGINIA POLYTECHNIC INSTITUTE, BLACKSBURG, started June 15 for a trip to Costa Rica, Panama, Puerto Rico, San Domingo, Jamaica and Cuba to study live stock and agricultural conditions and especially transmissible diseases of animals of those countries.

HOG CHOLERA.*

BY C. D. MCGILVRAY, M.D.V., WINNIPEG, MAN.

This serious affection of swine has fortunately only made its appearance on rare occasions in Manitoba. Dunbar reported an outbreak which occurred at Kildonan during 1886 and Stevenson an outbreak near Carman in 1899. Since the latter time it has not made its appearance here until August, 1911, when it was reported to be in existence among pigs on premises near Winnipeg.

Upon investigation it was found that the outbreak was of a rather serious nature and existed on premises and in districts where a large number of swine were being kept.

Efforts were therefore immediately directed towards controlling and eradicating the disease from the districts in which it existed and at the same time to ascertain and determine the source of infection.

Searching enquiry failed to bring forth any evidence or information as to the infection having been introduced by fresh hogs brought into the district and no fresh hogs had for some considerable time prior to the detection of the outbreak been introduced onto any of the premises on which the disease first manifested itself. A curious and striking feature was that on all of the premises where the disease first manifested itself, the hogs thereon were being fed uncooked swill, kitchen refuse and garbage obtained from hotels in the city of Winnipeg, while on other premises in the same district, where they were not feeding such refuse and garbage, the hogs remained healthy and the disease did not manifest itself until a much later date and after ample time had elapsed for them to become affected either by direct or indirect contact or intermediary means from the premises where the disease already existed, and in such cases information was obtainable that the infection had been introduced by such means.

* Presented to the Veterinary Medical Association of Manitoba, Brandon, March, 1912.

† Rutherford, in his report for 1910, refers to the possibility of outbreaks of hog cholera being started in suburban districts among swine being fed on uncooked garbage, and our experience and observations in connection with the recent outbreaks of hog cholera dealt with, indicate and support the theory as to fresh outbreaks originating from such a source.

While the outbreaks dealt with by us in the district surrounding Winnipeg furnished strong circumstantial evidence in support of this theory, yet outbreaks at Kenora furnished even more striking illustration and convincing proof thereof.

During October last some disease was reported as causing the loss of a number of hogs on the premises of a Mr. H.—— at Kenora and upon investigation it was found that the owner of these hogs conducted a hotel at Kenora and that the hogs were being fed on the swill and kitchen refuse from the hotel. The symptoms manifested by these hogs, as well as the post-mortem lesions, were characteristic of hog cholera. No fresh hogs had been introduced on to the premises in question for a period of one year prior to the time of the outbreak. Hogs were also found to be affected on the premises of three other owners, which were separated from each other by several miles, and upon each of which the swine were being fed uncooked swill and kitchen refuse obtained from hotels in Kenora. The disease manifested itself on all of these premises almost simultaneously without any possibility of the infection being introduced either by contact or intermediate means from each other's premises.

On two other premises in the same district hog cholera was subsequently found to be in existence, but the infection in these cases was directly traceable to the introduction on to the premises of hogs which were obtained from one of the parties already referred to.

On further examination of all hogs on premises in the vicinity of Kenora, which were kept under observation and inspected at intervals covering a period of over three months, it was shown

† See page 18 in the report of the Veterinary Director General for the year ending March 31, 1911.

that the disease was only found affecting hogs which were being fed on uncooked kitchen refuse and garbage or on premises where garbage fed hogs had been introduced.

Summing up the outbreak at Kenora, on four premises 146 hogs were found to be affected and slaughtered and on each of these premises the only information obtainable as to the source of infection was to the effect that they had been feeding uncooked swill or kitchen refuse obtained from certain hotels. On two other premises, on which the disease was found to be in existence among 17 hogs, the source of infection was traceable to there having been introduced on to the premises hogs which had been obtained from one of the parties whose hogs were being fed on uncooked hotel swill. The hogs which were thus obtained and introduced being the first to show evidence of the disease and the history obtained was that the other hogs on the premises had been entirely healthy until coming into contact with the ones referred to.

Hogs were inspected at 13 other premises in the Kenora district, the hogs on which, however, had not been fed uncooked swill or kitchen refuse and these remained entirely healthy although kept under close observation for a period of over three months. Needless to state that during this period due precautions were exercised to prevent any possible infection being introduced from other infected premises.

Regarding the outbreaks in the districts surrounding Winnipeg, our experiences were very similar to those at Kenora. The disease appeared and manifested itself on premises on which the hogs were being fed uncooked swill or kitchen refuse and then spread from such centers to other premises in the same district.

In connection with the outbreak of hog cholera at Winnipeg, which was of large extent and a rather serious nature, we found the disease to be in existence on 62 premises and it was necessary to slaughter 2,219 swine either diseased or close contacts with diseased pigs. We also visited an additional 212 premises and inspected thereon 2,190 pigs, which were kept under observation and inspected at intervals extending for a period of over three months.

The question may arise in some minds as to why uncooked kitchen refuse and garbage may give rise to the disease. In this connection it was quite often found by us that hotel kitchen refuse and garbage which was being fed to hogs contained quantities of pork products (especially sausage and pork cuttings). It also came to our notice that coincident with the appearance of this outbreak, large quantities of pork products from the United States had been imported into Winnipeg and that a distribution of these pork products was made to certain other districts, viz., Kenora, Port Arthur and Fort William, and that shortly after the distribution of these products there followed, almost simultaneously, at each of these districts outbreaks of hog cholera, and it would therefore appear quite probable that the meats in question had been infected.

The result of our investigations and inquiries, therefore, furnished very strong circumstantial evidence in support of the belief that many fresh outbreaks of hog cholera are started in suburban districts by feeding uncooked kitchen refuse and garbage containing pork or pork products to swine.

Moore, of Cornell, refers to a serious affection other than hog cholera occurring among swine as the result of them being fed on kitchen refuse containing certain alkalies. However, while kitchen refuse containing certain alkalies may no doubt be the cause of serious affections and losses among pigs, these alkalies could not have been the cause of the losses occurring among the pigs in the cases referred to, as when hogs were introduced on to other premises, coming from any of these upon which this hotel swill was being fed, fresh outbreaks were started; showing that the disease was essentially of a contagious nature. Again on all premises which we kept under observation, where the hogs were being fed uncooked swill or kitchen refuse, sooner or later, the disease made its appearance and subsequently outbreaks occurred on other premises in close proximity.

The disease having, in all likelihood, been introduced by this means, and involving premises over a considerable area, widely separated from each other, centers of infection were set up in many districts and serious outbreaks followed thereafter.

Once the outbreaks became manifest, the infection was spread in many and varied ways. Among the possible means by which the infection was conveyed from place to place, which came under our notice, were: By direct contact, that is, diseased or contact hogs having been introduced from some of the other premises, or by the premises being in close proximity to each other. Evidences were found of the possibility of the infection having been carried by means of dogs and where suspicion of this was aroused, steps were taken to prevent it. It was also brought to our notice that certain birds, especially crows and pigeons, appears to be responsible in spreading the disease from place to place. Suspicion was also aroused in many cases as to the infection having been introduced onto premises by the feet of visitors and others. Again, suspicion was also aroused as to the disease being carried in small streams which infected other premises through which the same stream had its course and on which piggeries were located.

The disease, in the outbreaks in question, appeared in both the acute and chronic types. At the beginning of the outbreaks the acute type was the most in evidence and was more marked in severity, becoming less so with the lapse of time and approach of winter. This depended no doubt upon the virulence of type or strain of infection, which appeared to become weakened or attenuated with the lapse of time.

In the acute type the symptoms observed were, sluggishness; capricious appetite; gumming or adhesions of the eye-lids; accelerated breathing, associated with cough in some cases; the appearance of reddened or purplish blotches on the skin especially round the region of the ears and neck, the under surface of the abdomen and the inner thighs. The bowels, in some cases, were constipated, while in others diarrhoea was present. Progressive weakness, uncertain gait, terminating in loss of power of hind limbs, was frequently noticeable. In the acute cases, affected animals rapidly succumbed to the disease. Hogs ranging in age from two to six months seemed to be more severely affected and more rapidly succumbed to the disease than those older.

In chronic cases the same symptoms were in evidence, although less pronounced and the course of the disease more prolonged with progressive weakness and emaciation supervening. Post-mortem lesions were chiefly in evidence affecting the lymphatic glands, lungs, heart, kidneys, spleen and intestines. The lymphatic glands were usually observed to be markedly reddened and enlarged; the lungs showed many small ecchymosis and large pneumonic areas, dark red in color, consolidated and sharply defined from the healthy lung. Ecchymosis was also observed on the heart surface. The kidneys were darker in color than normal and presented numerous petechia (the turkey egg appearance). The spleen in many cases was greatly enlarged, although in a few cases it also appeared smaller than normal. The intestines in acute cases, where the duration of the disease had been short, petechia and ecchymosis were noticed on the outer surface and on the inner surface areas of the mucosæ often appeared congested, inflamed and more or less swollen.

In chronic cases somewhat similar lesions were observed as those in acute cases, together with characteristic ulcerations of the intestines, noticeably round the region of the ileo-cecal valve, as well also as thickening of the mucosæ in other parts of the intestines.

While formerly the specific cause of hog cholera was thought to be due to the bacillus suis, it has in recent years been demonstrated by Dorset and others that this germ only plays the part of an associated or secondary invader and the true infective agent has not been demonstrated, but is due to a filterable virus which is ultramicroscopic, so that at present there is no means of determining the diagnosis of hog cholera, other than by the characteristic symptoms and post-mortem lesions and its infectiveness or contagiousness to other hogs which can be proved by the transmission of the blood from infected to healthy animals as well also as by the placing of diseased animals in contact with healthy pigs which sooner or later contract and develop the disease.

Meeting place A. V. M. A., Das Deutsche Haus, Indianapolis, August 26 to 30.

THE VETERINARIAN AS A PUBLIC HEALTH OFFICER.

BY A. T. KINSLEY, M.S., D.V.S., KANSAS CITY, Mo.

The conservation of the health of the people is a problem that seriously concerns the undivided attention of the best talent in every civilized nation. The progress of a nation is dependent upon the health of its people, and the intellectual attainments of the general population indicates fairly well the condition of health that is maintained by the inhabitants of the country. In other words, education of the public is pre-requisite in the establishment of effectual sanitary regulations, and the enforcement and maintenance of efficient sanitary laws is dependent upon competent, industrious public health officers. The existing state of the health of the general public of any community, commonwealth or nation depends upon the wholesomeness of the food supply and the control of the dissemination of the various disease producing micro-organisms. The efficiency of a health official depends primarily upon his knowledge of the nature of foods and infective diseases.

The evolution of the sanitarian from the old time medicine man through the petty political stage to the present scientific standard has been comparatively slow, and it is possible that there are some unqualified officers still in charge of responsible positions. Before discussing the question of efficiency of veterinarians for public health officers, it is advisable to have an understanding of the qualifications of a veterinarian. In order that a veterinarian be eligible to the position of inspector in the Bureau of Animal Industry, of the U. S. Department of Agriculture, he must be a graduate of a college that gives a definite course of study prescribed by the Department of Agriculture. All such colleges maintain a curriculum that includes courses of pathology, bacteriology, meat inspection, ~~and~~ and dairy inspection, quarantine and hygiene, subjects that are of especial

importance to sanitarians, in addition to thorough courses in anatomy, physiology, medicine and surgery and the related collateral sciences. Men that complete such a course are equipped with the technical knowledge that is essential for a general health officer.

The efficiency of a man is determined by his accomplishments. The veterinarians employed by the B. A. I. inspected the carcasses of 49,179,057 animals from June 30, 1910, to July 1, 1911, and their inspection was sufficiently efficient that these meat foods were accepted as import products in practically all foreign countries. During that time 113,742 entire carcasses were condemned, as well as 874,211 parts of carcasses. In addition, 19,000,000 pounds of meat and meat food products were condemned as unwholesome and unfit for human food. The significance of the extent of these condemnations in the maintenance of the health of the consumer of meat food products cannot be overestimated. Many diseases and diseased conditions are of frequent occurrence in the carcasses of animals that are slaughtered for food. Thus it is a well known fact that the flesh of animals that have been slaughtered at the time or shortly after they were affected with high temperature is unfit for food, because of the production of chemical substances that are injurious to the health and sometimes disastrous to life.

Less than one-half of the meats and meat food products slaughtered in the United States is subjected to government inspection. Much of the meat is killed by the butcher in the smaller cities, towns and villages, and is not inspected. Some provision should be made for the supervision of the small town slaughter houses and the inspection of the animals killed therein by a competent health officer.

Some second class and many first class cities have a force of veterinarians who devote all or a part of their time in inspecting slaughter houses and meat food products of the butcher shop. These officials frequently condemn carcasses or parts of carcasses as being unwholesome and unfit for food, and it is seldom that butchers and meat dealers dispose of any meat or products

thereof as being unwholesome and unfit for food unless it is officially condemned; however, these dealers should not be censured for not detecting spoiled foods or diseased flesh, as recognition of such conditions, at least in many instances, is possible only by one skilled in this particular line.

Aside from meat inspection duties, veterinary employees of the Bureau of Animal Industry have, in co-operation with state authorities, successfully eradicated the *Margarapus Annulatus*, the fever tick, from 57,520 square miles of infested territory during the last year. They have also diminished the infested area of scabies of cattle by 50,000 square miles and the infested area of scabies of sheep by 390,000 square miles. Other Bureau veterinarians have safeguarded the live stock industry of the United States from the importation into our country of such diseases as Surra, Rinderpest and foot and mouth disease, which is of no small financial concern to the animal husbandry of our country.

Many veterinarians employed as sanitary officers for the various states in the Union have accomplished much in the preservation of the health of animals of their respective states and indirectly of the people. Other veterinarians have rendered efficient sanitary service to many towns and cities in the capacity of milk and meat inspectors. The principal benefits obtained by city milk and meat inspection have been in the betterment of sanitary conditions and the maintenance of health of the human. No small part of the health in general of the live stock of the United States and indirectly of the health of the people, should be attributed to the ever watchful local veterinary practitioner who efficiently safeguards his community from the ravages of such diseases as cow pox, anthrax and rabies.

There are many diseases of the lower animals that are common also to the human, and the veterinarian is certainly best qualified to identify these diseases in the animal and to properly quarantine, destroy, disinfect and prevent the spread of such diseases to man. About 150,000 humans die annually in the United States of tuberculosis. That tuberculosis is transmissible

to man from lower animals is now an accepted fact by practically every one. The New York Board of Health, in a recent report, states that a large percentage of infant tuberculosis and that about 2 per cent. of adult tuberculosis is of bovine origin. It has been further shown that about 10 per cent. of articular tuberculosis of the human is also of bovine origin. Milk sickness, a disease primarily of cattle, and which is also transmissible to man, made its appearance in New Mexico three years ago. Malta fever, a disease of goats, transmissible to the human, is very common to the countries bordering the Mediterranean Sea, and this disease, according to report, has recently been identified in Texas.

The medium through which the human obtains the infective micro-organisms causing tuberculosis, milk sickness and Malta fever is invariably milk. The prevention of the transmission of these diseases to man is dependent upon the identification of tuberculosis or milk sickness in cattle and Malta fever in goats and the prohibition of the use of milk from any animal affected with any one of the above diseases; the establishment of a proper quarantine; and the final disposition of the diseased animals or carcasses and disinfection of the premises. A man capable of tuberculin testing cattle and interpreting the results, and capable of diagnosing milk sickness and Malta fever in the milk supplying animals, is alone efficient as a milk and dairy inspector.

Rabies is a disease common to the domestic animal and man, and is readily transmissible by means of the saliva and other secretions. Anthrax is another disease that affects practically all mammals, the infection of which is readily transferred from animal to animal through wound inoculations and possibly also by milk. Cow pox and foot and mouth disease are diseases of animals that are capable of being transmitted to man through milk. The above named diseases, being common to the domestic animals, are diagnosed and efficiently controlled by one versed in comparative pathology, that is, a veterinarian.

Milk and dairy products are now extensively used as human food, in fact, from one-fifth to one-sixth of the food consumed

by the people of the United States is derived from the dairy cow. There is probably no one who has a knowledge of milk, the source of its contamination, the changes which it undergoes after leaving the animal, better than the veterinarian. It is found that milk is frequently a carrier of diseases infective to man only. Milk borne typhoid fever is credited with about 100,000 cases of this disease annually in the United States, of which fifteen to twenty thousand die. Scarlet fever and diphtheria are easily and frequently transmissible through milk. Through milk borne endemics these two diseases are paying a heavy death toll annually. The great loss of human life in the United States to-day is due to dysenteric disturbances of babies, caused by impure or unwholesome milk.

It must not be understood that the veterinarian alone should be responsible for the preservation of health of the public. The various phases in which the veterinarian is and should be a factor have been briefly discussed, but the conservation of the health can be brought to the highest standard only by the co-operation of the physician and the veterinarian. Each has his field, although they essentially overlap. For example, when the physician finds any cases of Malta fever, infantile intestinal tuberculosis, or other diseases that may be milk borne, he should consult the veterinarian and obtain his co-operation in determining the source of the infection and thus prevent further extension of the disease. On the other hand, if the veterinarian finds rabies, or other diseases transmissible to the human, prevalent in any of the domestic animals, he should consult with the physician and advise as to the best means for prevention of infection in the human. Such freedom of consultation will be of untold benefit, and, if carried on as suggested, it will be the cause of establishing a new standard of health.

In summarizing, it is very evident that the veterinarian is naturally the most efficient of sanitarians, in the maintenance of health of the domestic animal. It has been further shown that many of the diseases of animals also affect the human, and in view of the fact that there are many human diseases and diseased

conditions that have their origin in the domestic animal or in the products of these animals, it seems self-evident that veterinarians should continue to act in the capacity of health officers, especially as meat and milk inspectors, and every well regulated board of health should have one or more veterinary members.

A PRELIMINARY REPORT ON THE ACTION OF CHINA BERRIES, LEAVES AND BLOOMS ON PIGS.

By C. A. CARY, Auburn, Alabama.

It is quite commonly accepted in the South that china berries have an anthelmintic effect on animals and children. The negroes give china berries to their children for intestinal worms. Some of the farmers give them to stock, especially horses and mules, for the same purpose. It has also been reported that robins and some other birds which eat the berries become intoxicated and often fall to the ground from the tree and remain intoxicated for sometime. These reports led me to make some tests. So far we have tested the action of china berries, leaves and blooms on pigs. The following are the results of the preliminary test:

1. The berries, leaves and blooms all produce intoxication in pigs.
2. Somewhat prolonged feeding of the berries will produce distinct fatty degeneration of the kidneys and liver.

There are other changes, but these are the most prominent.

THE annual banquet and ball of the Division of Veterinary Medicine of the Colorado State Agricultural College was held in Masonic Temple, Ft. Collins, Colo., June 1, 1912. There were 105 present.

THE ANIMAL NEWS, published in the interest of the New York Women's League for Animals, is a little monthly destined to do considerable toward making people kinder to animals. The subscription price is \$1.00 a year and the publication office is No. 26 West 40th Street, New York. The reading of this little book each month will do your soul good, and incidentally your dollar will assist in the relief of some suffering animal.

AN INVESTIGATION OF AN OUTBREAK OF SEPTICAEMIA IN POULTRY.

By R. A. WHITING, D.V.M., ASSOCIATE IN ANIMAL PATHOLOGY, PURDUE
UNIVERSITY AGRICULTURAL EXPERIMENT STATION, LAFAYETTE, IND.

The history of this outbreak of septicaemia hemorrhagica is as follows: My attention was drawn to the outbreak by the receipt of the carcasses of a chicken and a turkey accompanied by a letter from the owner giving the following information: He had recently lost a cow from a highly acute disease. The symptoms given by the owner were as follows: high body temperature, nervous symptoms such as frothing at the mouth, drawing the neck to one side, partial paralysis and later there was labored breathing and diarrhoea. At about the same time that the diarrhoea set in, the cow layed down and was unable to get up, gradually becoming depressed, then comatose and died in 48 hours from the onset of the disease. The carcass was removed to the rear of the hog pasture and left exposed for the hogs to feed upon which they did to the extent of engorgement. The following day all of the hogs were slightly indisposed and did not eat their regular ration and exhibited a profuse diarrhoea which persisted for several days. In the meantime they were continually eating portions of the beef carcass of which small undigested portions were present in the diarrhoeal discharge. No deaths occurred among the hogs, although they ate nearly all of the carcass.

Chickens and turkeys were allowed the freedom of the front portion of the hog pasture which contained hog feeding troughs and shelters. They were seen to feed upon the fresh hog manure which contained the undigested portions of the beef carcass. Several of the chickens and turkeys were found dead within a few hours after they were noticed feeding in the hog lots. Some appeared stupid and died in from 20 minutes to an hour after

their condition was noticed. Later the disease seemed to assume a more chronic course, with deaths resulting in from one to several days after the first symptoms were noted. The affected birds seemed stupid or dejected. In most cases there was complete loss of appetite. Diarrhoea was common in all, at first scanty and later profuse and yellow. A few segregated themselves from the flock. All became weak and droopy, most of them lying down wherever they happened to be, and staggered when attempting to move. They gradually became weaker and then comatose, with death occurring while perched on roosts, lying on the ground or while in a droopy standing position. The mortality was about 90 per cent., the disease running unchecked until nearly the entire flock, consisting of 70 chickens and 12 turkeys, died. The post mortem lesions in the turkey and chicken were those of septicæmia hemorrhagica.

Microscopic Examinations—Examinations made of blood smears and hanging drops from the hearts of the chicken and turkey revealed the presence of motile and non-motile bacteria, varying in length from 1 u to 2 u. The examinations made from the livers disclosed the presence of several varieties of bacteria, as decomposition had set in. Agar plates were then inoculated with the heart blood and the organisms isolated in pure cultures and identified. The motile organism, owing to its ability to coagulate milk with the production of acid, and produce a profuse growth and fermentation of lactose-litmus agar, was designated as a variety of *B. coli communis*. The non-motile organisms belonged to the bacterium septicæmia hemorrhagica group. It showed bipolar staining and produced a faint membranous growth upon bouillon which later became turbid, especially in the lower portions of the test tube. No change occurred when grown in litmus milk. The growth upon agar was slow, and upon lactose-litmus agar the growth was slightly alkaline and without the production of gas. All culture media was standardized.

Pathogenesis—Pure cultures of each organism were then injected subcutaneously into rabbits with the following results:

Those receiving *B. coli communis* became sick, but recovered. Those receiving the bacterium became sick and died in from 12 to 16 hours. An exposure check died in 36 hours. The lesions observed were those of septicæmia. A pure culture of the organism was recovered from the heart blood of the inoculated rabbits and injected into chickens, producing death in from 28 to 48 hours. The lesions present in these experimental animals were also characteristic of septicæmia hemorrhagica. Pullets that were inoculated subcutaneously with a pure culture of the bacterium from the hearts of the chicken and turkey died in from 16 to 21 hours, with lesions of hemorrhagic septicæmia. A pure culture of the bacterium was recovered from the hearts of the inoculated pullets and injected subcutaneously into old hens, producing death in from 22 to 36 hours. Mixed cultures of the bacterium and *B. coli communis* were then injected subcutaneously into an old hen, producing death in less than 16 hours. A young pullet exposed to the inoculated birds died in 6 days. A hen exposed under the same conditions remained well.

The cultures used varied in age from the fourth to the twelfth generations and were grown at a temperature of 37 degrees C. The subcutaneous injections consisted of doses of 1 cc. of a 24-hour bouillon culture. The virulence of the bacterium for chickens was apparently decreased to some extent after passage through the rabbit and to some extent after passage through fowls, and the virulence seemed to be increased by the addition of *B. coli communis* to the bacterium. Such a mixed culture produced death in from 12 to 16 hours even in old individuals. were identical both morphologically and culturally with the cultures first isolated from the hearts of the original chicken and turkey.

The symptoms in the rabbits consisted of uneasiness, fever, drowsiness and coma. The pullets and hens first appeared stupid, later becoming drowsy with loss of appetite. Diarrhœa then set in, at first slight, gradually becoming more profuse, watery and of yellowish color. As soon as the diarrhœa began the birds

became very weak, death occurring soon afterward while in a comatose condition.

Morbid Anatomy—The lesions observed in the experimental animals consisted of congestion of the mucosae and skin, this being especially well marked in the combs of the pullets and hens, and petechial hemorrhages in the pericardium, endocardium pleurae, lungs, liver, spleen, kidneys, intestines and peritoneum. The liver was usually the seat of numerous pin point white foci. These contained necrotic cells, which stained faintly or not at all, puss cells and numerous bacteria of the variety in question. The lesions present in the lungs of the pullets and hens were oedematous as well as hemorrhagic.

DR. LEMAY of Ft. D. A. Russell attended the recent semi-annual meeting of the Colorado State Veterinary Medical Association held at Ft. Collins, Colo.

ACKNOWLEDGMENTS.—Announcement for the 28th annual session School of Veterinary Medicine, University of Pennsylvania, 1912-13, and of the New York State Veterinary College, 1912-13, Kansas City Veterinary College Quarterly, March, 1912, the Agricultural Journal of the Union of South Africa, Bulletin 145, U. S. Dept. of Agr., Bureau of Animal Industry, Trypanosonia Americanum (a common Blood Parasite of American Cattle), by Howard Crawley, Zoological Division, Farmers' Bulletin No. 480, U. S. Dept. Agr., Practical Methods of Disinfecting Stables, by George W. Pope, Vet. Insp., Quarantine Div., B. A. I.; Bulletin 29, Rabies and Its Control in New York State, by John G. Wills, Chief Veterinarian, New State Dept. of Agr.; Circular 196, U. S. Dept. Agr., B. A. I.; Some Results of Cattle-Tick Eradication, by A. D. Melvin, Chief B. A. I.; Tenth Annual Report of the Director of the Bureau of Science, by Paul C. Freer, Director, Manila; the Philippine Journal of Science, the Philippine Agricultural Review, Veterinary Notes, Parke, Davis & Co., Detroit, the Cornell Veterinarian, Proceedings Indiana Veterinary Medical Association, Notes on Trapezium in the Equidæ, by S. H. Chubb, Am. Museum of Nat. Hist., New York, N. Y.

TWO EVILS.

BY HERMAN GROSS, *SENIOR STUDENT MCKILLIP VETERINARY COLLEGE.

Two evils that beset the veterinary profession are the correspondence schools, "diploma mills," and the patent medicines. The influence and effect of these on the public could be greatly nullified by some little effort on the part of each ethical member of the profession. There is no reason on earth why these correspondence schools could not be compelled to shut down sooner or later.

From this source a lot of quackery is bred, it makes a lot of people think that the veterinary profession is an easy one to learn and altogether creates a false impression in the public mind. They produce law breakers; many a "sucker" has sent off his money and got the course and "diploma" thinking that the possession of the latter made him a qualified practitioner and as a result got in trouble sooner or later.

Some even consider themselves capable of passing a State Board examination and apply for it as has occurred in Minnesota, Nebraska, etc. It can all be summed up that these "mills" are detrimental to the profession, not that their "graduates" can be said to be competitors of regular graduates, but because of the false impression they create on the public mind.

Therefore something should be done, and can be done, if gone about in the right manner; and something that every live veterinarian can add his little assistance to.

These schools advertise mostly in farm journals and to some extent in other popular magazines; and in any journal wherein their advertisements are found we can write the publisher and ask them to discontinue accepting any advertisements of these schools.

* The author has received his degree in veterinary medicine since writing this article, and is practising his profession in Webster, S. D.

If a clear and expressive letter is written there is no question but that a sound-minded publisher will give the matter due consideration. I took it upon myself to write the *Farm, Stock and Home* in regard to the matter, with the result that I have not seen any of these advertisements in that paper since, and have now written the *Dakota Farmer*, asking them to further decline such advertising and have no doubt in my mind but that they will do so.

If every veterinarian would write one letter to any paper that carries these advertisements, a lot of good could be accomplished.

Now, to our second evil, the patent medicines. These, along medical lines, have been well exposed of late years, but there is a line of veterinary proprietaries that ought to be exposed for the benefit of the profession.

These, same as the diploma mills, are pretenders upon the public mind and are deceptive, to say the least about them; they, nearly all of them, depend upon the glib and untruthful advertisements as bait to get the public's money.

There is also a class of pretenders, imposers upon the public mind, as the individual of "Anti-abortion serum," fame of Wisconsin, that the veterinary profession should know all about.

The American Medical Association maintains a department for the analysis and exposure of all proprietary preparations, the result of which is published in the journal of the association, and I believe that the A. V. M. A. could do something along similar lines.

The services of a good analytical chemist could be obtained to analyze as many of these preparations as the association would decide upon to have examined.

I believe that it would be money well spent and the benefit derived from it would be far greater than the expense involved.

The "stunts" and "cures" made by some of these remedies could almost make a man lose his faith in all materia medica and therapeutics taught at college. To illustrate absurdity of statements made by some of these medicine men a few examples are given here.

“ ‘*Jointinc.*’ This is a positive cure for joint ill, blood poison and leakage of navel in colts and is guaranteed to cure or money refunded.”

“ ‘*Visio.*’ A remedy for moon blindness (Ophthalmia), cataract and conjunctivitis. ‘Visio’ will convince any horse owner that it is a good remedy for defects of the eye irrespective of the length of time the animal has been afflicted. No matter how many doctors have tried and failed, use ‘Visio’ under our guarantee to refund money if it does not cure.”

“ ‘*Mack’s \$1,000 Spavin Remedy.*’ Must cure or your money back. We guarantee to cure your horse of bone or bog spavin, ringbone, thoroughpin, curb, capped hock, shoe boil, spring knee, lacerated and ruptured tendons, sweeny and all other forms of lameness.

“ Mack’s \$1,000 Spavin Remedy goes right to the source of trouble and quickly restores natural, healthy conditions in the bones, muscles and tendons of your horse.”

Here is the best one of all, our troubles in diagnosis of lameness are all vanished by the use of it.

“ ‘*Tuttle’s Elixir.*’ Locates lameness. Simply bathe the limbs with Tuttle’s Elixir, then watch for the little water blisters.

“ That’s where the horse is lame. Where there is no lameness, the Elixir will dry out like water.”

This is enough to show the rank statements made by the dope makers and it is by these untruthful representations that they get the money from the public, who think they are getting much more for their money this way than if they consulted a veterinarian for his honest opinion or advice.

But so it is, as it ever will be as Barnum said, “The American people wants to be humbugged,” and this will continue as long as there is a sucker born every minute.

These two evils as here presented have an effect on the profession that can be modified if united efforts are made in that respect.

I trust that these few lines may stimulate the opinion of a few at least, and whatever is done will be for the good of all.

THE INTRA-DERMAL TEST FOR TUBERCULOSIS.

BY FRED W. PORTER, D.V.M., TAMPA, FLA.

It has recently been my privilege to apply the intra-dermal test for tuberculous cattle, for the first time officially, in the state of Florida. The opportunity also served to compare the intra-dermal test with the subcutaneous temperature test, under our local conditions. My test was used within a day or two of six weeks after the temperature test had been given.

Some years ago, 1906 to 1908, acting under an ordinance of the city of Tampa, I tested by the old method some 3,500 head of dairy cattle, supplying milk and dairy products to this city. I did not then consider that test as good, owing to its being subject to so many variations; still my results were fairly satisfactory, as I was enabled to reduce the per cent. of reactors from 50 per cent. to about 9 per cent. From 1908 up to a few months ago nothing was done. Consequently conditions had gotten back to about their original standing.

In this locality our dairy cattle are never stabled except at the time of milking; this usually occurs between 11 and 2 o'clock midday and at the same hours at night. This means, that in order to use the temperature reactions, the cattle must be kept under abnormal conditions for from 48 to 72 hours. This of itself will produce a rise in temperature. Then, during the late winter, spring and early summer months we have the virulent tick to contend with, and even our native, immune cattle will very often carry an abnormal temperature at this season, so that true, tuberculin reading cannot be had. Again, a high milker, in the full period of lactation, will very often carry a temperature of 104 degrees F. during a few hours of one of our hot afternoons. Late pregnancy or approaching parturition also makes it inadvisable to use the thermal test. None of these conditions affect the intra-dermal test.

My opportunity came when I was called upon to retest sixty

head of dairy cattle that had reacted to the thermal test. The work was done under the direct supervision of the veterinarian for the Florida State Board of Health, who was present by the request of the Mayor of Tampa, and in the presence of the city milk inspector. The intra-dermal test was used by and with the consent of all interested parties.

The accompanying table will show the comparative results of the two tests. The intra-dermal test was made within a day or two of six weeks later than the thermal test. I attribute the apparent variance largely to tick infestation. Even our home cattle, which are practically immune to tick fever, will carry some temperature and show a falling off in condition when our warm weather comes on and the tick becomes virulent. The concentrated tuberculin used was furnished by the Mulford Company, as were the special syringe and needles used. Where reactions were had, they were very pronounced, even a novice would have no difficulty in recognizing them; if there was no reaction, the evidence was just as plain.

These cattle were part of the herd of an Italian dairy and from past experience I expected to be pretty well kicked about. But I found it quite otherwise; of the sixty head, only one was at all restive and she not bad. Whereas, with the inoculation at the shoulder one must look out for a blow from the head, as well as dodge that hind foot that can reach the ear. The advantage of the intra-dermal test to the owner is, that it in nowise disturbs the regular routine of his dairy nor does it excite the cattle by unusual handling. Consequently there is no decrease in output. To the practitioner there is the very much simplified technique, the small number of necessary visits, no thermometer to break and the reactions are to one condition only. Personally, I consider that a very careful physical examination should precede either test.

I had hoped to have obtained the thermal readings of these cattle, as taken when the old method was used, so as to have given the results in tabulated form. This I have been unable to do.

Of the sixty head tested by the intra-dermal method, all of which had reacted to the thermal test, twenty-seven did not react to the intra-dermal test. Of this twenty-seven, six were considered as not clearly marked either way.

Four cattle were posted; two that reacted to both tests, both showed well marked lesions. One of the cattle in which the reaction was not definite also showed visible lesions. One that reacted to the thermal but not to the intra-dermal test; nothing to be seen or felt and nothing found under the microscope. The microscopic examination was carried out at the laboratory of the State Board of Health.

DR. R. C. MOORE and wife of Kansas City are journeying through the west and enjoying a well-earned vacation, Dr. Moore feeling quite at liberty to do so, particularly since he has disposed of his practice interests to Dr. J. V. Lacroix.

THE KANSAS CITY VETERINARY COLLEGE BULLETIN, Number 35, has been received, containing an account of the commencement exercises which took place on the evening of April 11. Dr. Tait Butler, prominent in veterinary circles and editor of "*The Progressive Farmer*," Memphis, Tenn., delivered the commencement address, the quality of which needs no mention, as all who know Dr. Butler and have heard him speak know that his utterances are always both interesting and filled with wisdom. We therefore congratulate the graduating class in having him address them. The degree of Doctor of Veterinary Medicine was then conferred by President Moore, accompanied by a splendid address, in which he outlined to them their duties to themselves, to their profession, and to the public, recommending to each as a guide in all cases and at all times the Golden Rule.

Dr. E. J. Johnston responded in behalf of his class, and finally Dean Stewart addressed the 130 graduates with his characteristic earnestness. The bulletin contains in addition an account of the meeting of Missouri Valley Veterinary Medical Association, held in Kansas City, January 30 to February 2, a report of the secretary of the Y. M. C. A., alumni notes, etc., and is altogether interesting.

REPORTS OF CASES.

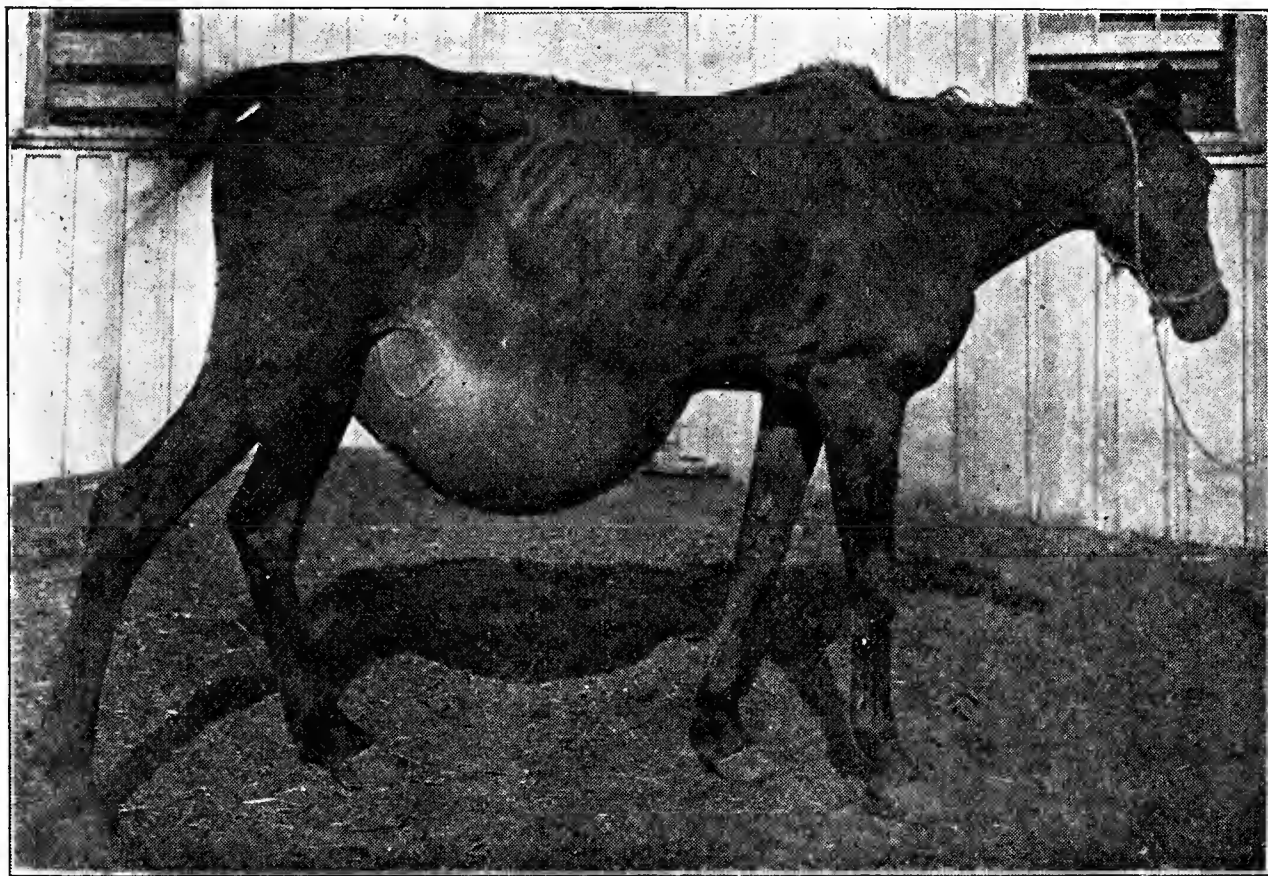
A CASE OF VENTRAL HERNIA.

By C. A. CARY, Dean of Veterinary College of Alabama Polytechnic Institute,
Auburn, Ala.

On November 30, 1909, a sorrel mare 12-14 years old came to the free clinic of the veterinary medical college of Alabama Polytechnic Institute. Three to four weeks previous to this time she received an injury a little to the left of median line, just back of umbilicus six or seven inches. A very large hernia appeared, the swelling covering almost the entire abdomen. This hernia presented some of the symptoms of a rupture of the pre-pubic tendon. The teats were advanced, the back swayed, the anus was pulled forward, and the immense enlargement indicated pre-pubic hernia. But there was no edema around it. For diagnostic purposes the mare was thrown and turned upon her back, and an attempt at reduction was made without success. Pushing the mobile contents of the skin and sack to one side, the abdominal wall could be felt along the borders of the rib cartilages and also at the pubic border; but the visible movements of the flanks during inspiration and expiration led one to believe that the pre-pubic tendon was not broken loose and that the rent was not large. Rectal examination also proved that the pre-pubic tendon was intact.

This mare was given one ounce of chloral hydrate at 1 p. m.; at 2.30, mare was cast, given chloroform, turned upon her back, abdomen cleaned and an opening through the skin and tunica near the injury-mark was made. Some three gallons of serum escaped. The hernial opening was 7 to 8 inches long and parallel with the rectus muscle fibres. A portion of the small intestine, the caecum and floating colon were in the hernial sack. These were replaced. The edges of hernial opening were pared away to produce raw fresh surfaces; then the edges were brought together with No. 19 silk thread, using interrupted sutures. The large fold of skin was left intact, and the skin opening was closed with interrupted silk sutures, leaving a small place for drainage. The mare was helped up, and a broad cotton pack was placed over the region of the rupture and over this a broad abdomen

bandage applied, having the digital ends tied over the back. Rather profuse suppuration from the drainage opening in the skin occurred for four weeks. The external stitches were removed and the fistulous opening cleansed with antiseptics daily for 5 to 6 weeks. Then the mare was given the run of a large pasture paddock. In about 3 months after this the mare was spayed through the vagina. At the time of spaying I could feel no adhesions between the intestines or between the intestines and abdominal wall. There remained a small fistulous opening

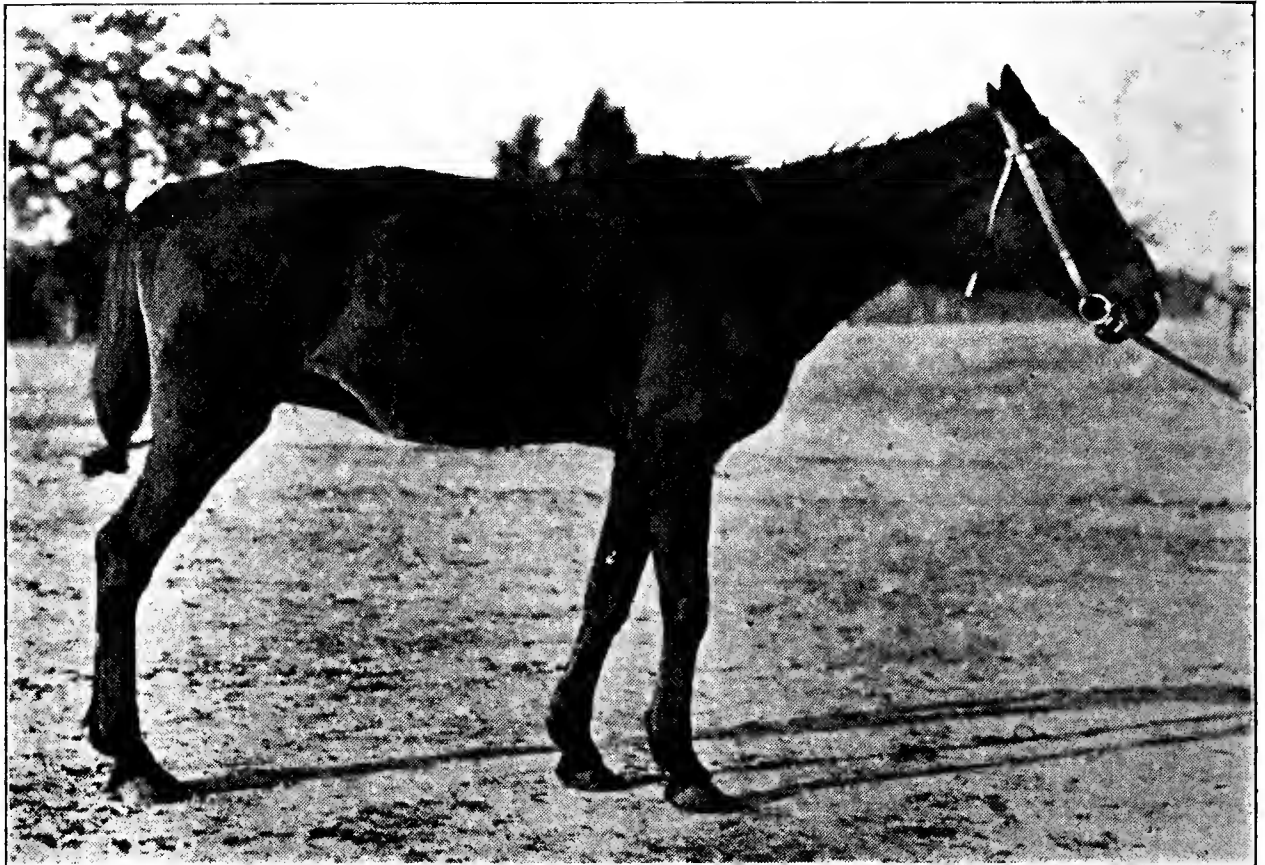


BEFORE

(6 to 8 inches in front of the place where the hernial opening had been stitched) for two and one-half years. About two years after the operation two or three fistulous openings appeared directly over the deep stitches, and April 18, 1912, I cut down on the place where the old hernial opening was located and removed the No. 19 silk thread sutures. This place soon healed. A long fistulous track ran back toward the mammary glands; yet the glands were not involved.

On May 7, 1912, the mare was destroyed, and the scar at the hernia was found to be firm, strong and very solid. The connective tissue fibres ran obliquely across the old opening, and

it would have been more difficult to tear the abdominal wall at the place of the scar than in any other part of the abdominal wall. There were 4 to 5 radiating star-like scars on the peritoneal surface of the cercum, 3 of the same on the large colon and some 3 to 4 on the mesentery of the small intestine; but, surprising as it may seem, there was not a single inflammatory adhesion or false union of any of the peritoneal surfaces. There



AFTER

were a few small white flakes on the surface of the liver. The remarkable points of interest are:

1. The healing or rapid union of the freshened surfaces of the hernial borders following the operation.
2. The firm, fibrous, untearable cicatrix.
3. The long retention ($2\frac{1}{2}$ years) of the silk sutures without any indication of absorption; yet some continual suppuration around them.
4. No peritoneal adhesion; all scars free and smooth.
5. The scars where the large ovaries were removed were not larger than a pea and were also smooth.

When aseptic conditions may be secured and maintained the following method of operation may be employed: Separate the

hernia sack from the skin by dissection or otherwise, and if the hernial opening is very small, twist the sack and suture just over or through the borders of the opening. If the hernial opening is two or more inches long, it will be necessary to open the sack, pare away the glistening smooth borders of the hernial opening and suture with sterile catgut. Now cut away one side of the sack or as much as may be required of the sack on one side and pull the other side or part of the sack (that is still attached to one side or border of the hernial opening) and stitch to the muscle or fascia, using sterile catgut. This should form a close and tight fitting flap, covering the hernia. Next bring the skin lips together; cover with aseptic or antiseptic packing and then apply broad bandages. Leave the bandage and dressing on for several days if no suppuration is present. If suppuration is anticipated, gauze drainage bands or tacks should be inserted before the skin is closed, and the parts should be dressed every day. Sometimes it is remarkable how much suppuration can be present in some cases in the healing of the hernial wound and the animal make a good recovery.

TRACHEAL PLASTIC OPERATION OR MAKING AN ALUMINUM WINDPIPE FOR A HORSE.

By H. M. STEVENSON, V.S., Perry, Iowa.

In presenting this item to the readers of the REVIEW, I will depart from the old form "I am not writing this with the expectation of presenting anything new," for I hope to present something new in two particulars: 1st, the operation; 2d, the result after time enough has elapsed to judge the same.

In naming this operation "Tracheal Plastic" I had in mind a similar operation in the cranium, "Cranial Plastic." So far as I am aware, there is no literature on the former operation.

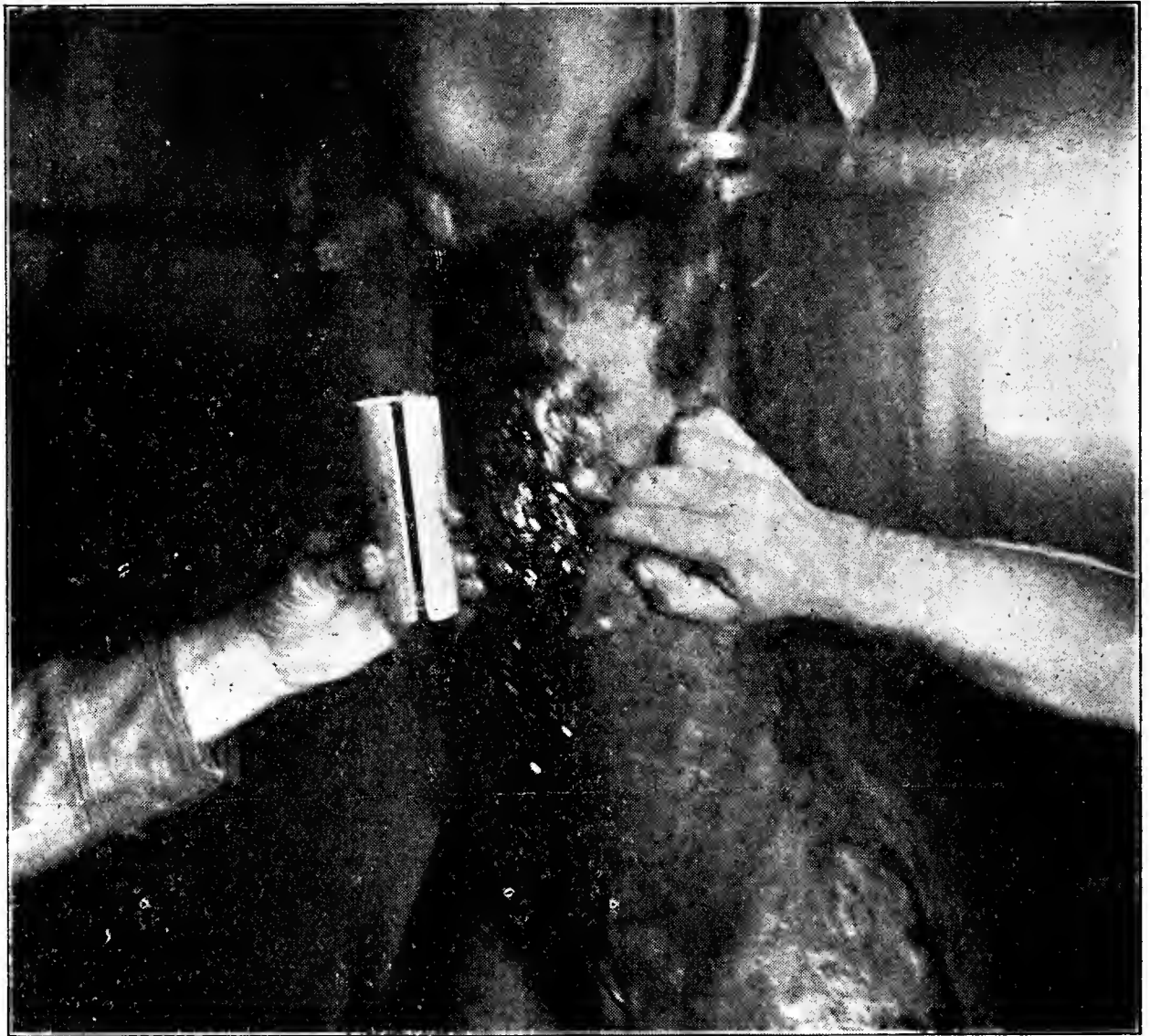
Subject—A Hambletonian stallion, with a mark of 2.08 $\frac{1}{4}$ when a four-year-old, owned by Dr. R. E. Doidge of Perry, Iowa.

During the season when it was a four-year-old, it had a bad case of distemper, and to relieve it the operation of tracheotomy was performed by a veterinarian whose work was not of the best, as he opened the trachea about 10 cc. and in healing it collapsed, so that it was difficult for him to breathe.

Operation—After scrubbing and shaving the field of opera-

tion, it was painted with tincture of iodine, after which a solution of cocaine (4 per cent.) and adrenalin (1-4000) was injected, an incision about 18 cc. long was made and the trachea opened up in the old wound fully 10 cc. long.

Previously an aluminum tube $12\frac{1}{2}$ cc. long and $4\frac{1}{8}$ cc. in diameter, with perforations near the edge as shown in cut, had been made, which was inserted in such a manner that the upper



end extended above the first tracheal ring that was collapsed, as also below the first good ring.

The cartilaginous rings that were collapsed were brought over the aluminum tube and stitched fast with silver wire, passing through perforations in metal tube and over cartilages alternately.

The tissues were then brought together and stitched with uninterrupted catgut sutures, and the skin stitched with interrupted sutures and a dry dressing applied.

The operation was performed without the use of any holding

appliances except the halter, which was fastened to either side of the stall and to the beam above, the horse remaining on its feet throughout the ordeal and suffering no pain.

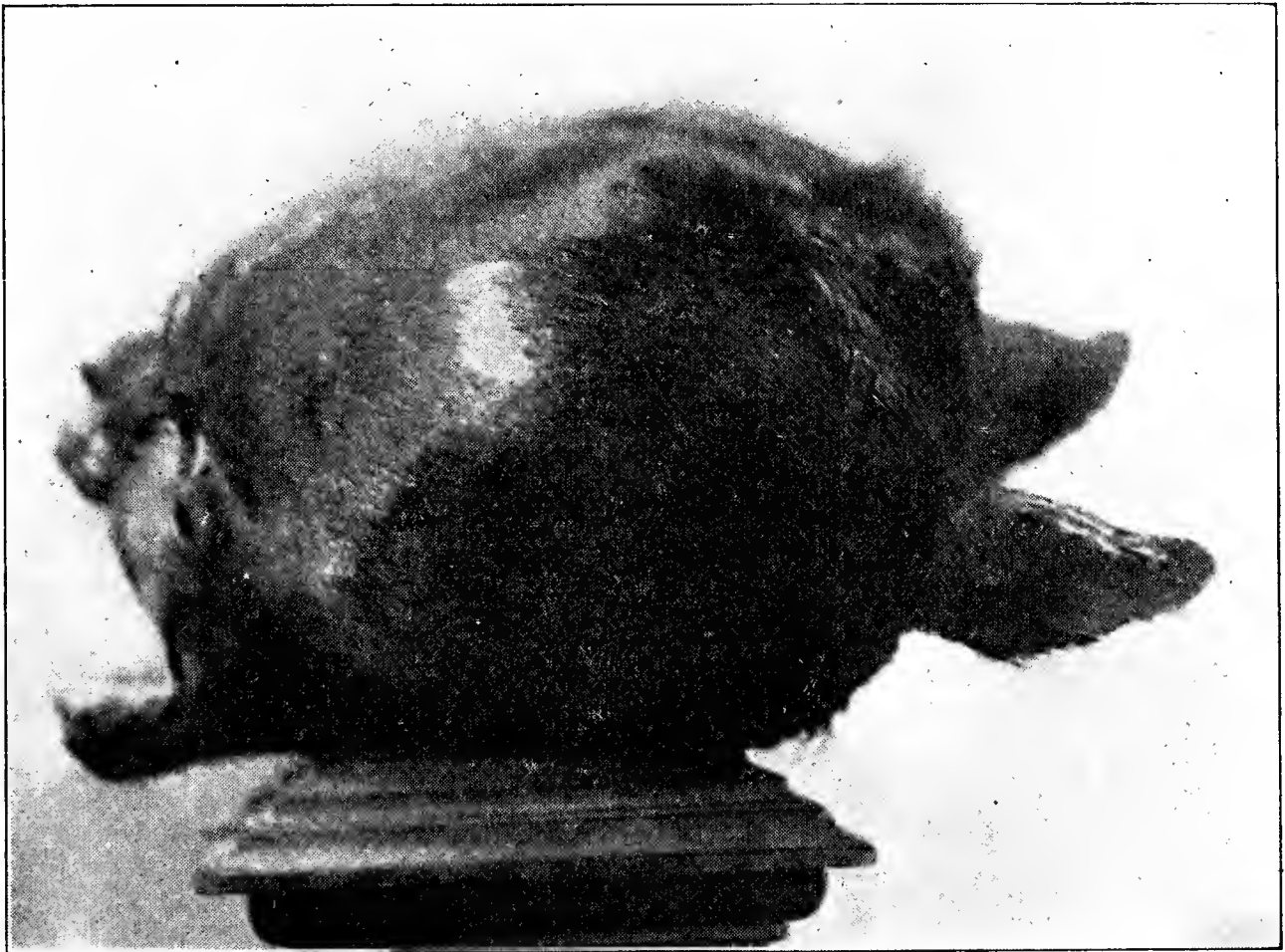
P. S. June 5—The stallion is making an uneventful recovery, this being the twelfth day; has not missed a meal; feels fine; has perfect use of neck (very little swelling); wound about half closed up, very little suppuration outside. There was some odor on his breath for two or three days, but it has cleared up now.

P. S. June 16—Twenty-three days after operation the wound is practically healed (only about one inch left), very little pus or swelling, and the horse has been driven without any discomfort; in fact, seemed to enjoy it, as he gets plenty of air.

HYDROCEPHALUS.

By H. J. COGGINS, D.V.M., Ilo, Idaho.

On April 23, 1912, I was called to attend a mare in labor. I found the case very complicated; but after two hours was suc-



cessful in delivering the foal, everything being normal, with the exception of the head, which measured seventeen inches in



width, fourteen inches in length and nine inches in depth. The mother of this colt is a standard-bred Percheron mare, seven years old. She is in good health and working every day.

AN INTERESTING CONDITION.

By J. E. AGHION, V.S., Veterinarian State Domains, Sakha, Egypt.

The accompanying photograph which I here produce presents somewhat of a remarkable condition, which I have met with twice in practice.

The subject is a four-year-old bull, dark bay in color, but marked with white.

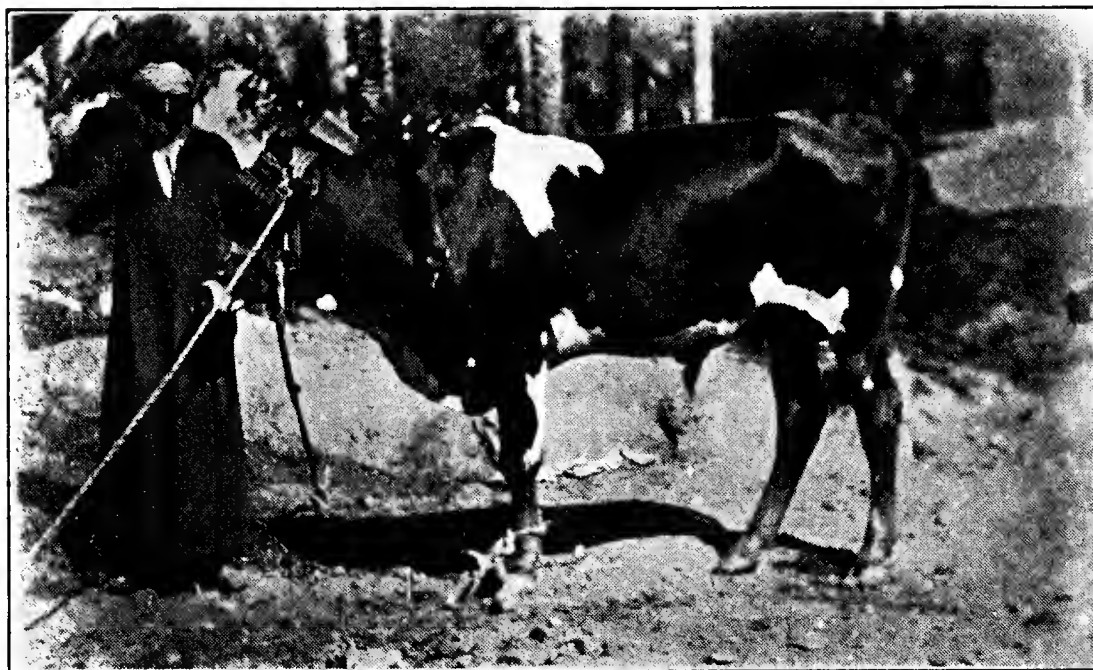
The queer features about him is that he has got a full-grown testicle and leg (left post-leg) attached to the upper part of the near side of his neck.

The testicle is enclosed in a layer of skin (covered with thin hair), unlike that of the scrotum, which is soft, thin and generally black in color; it looks more like a layer of common skin.

The leg springs from above the testicle, passing over it down-

wards; it constitutes a femur, patella (both atrophied or very small in size compared to other parts of the same leg); the tibia, fibula, tarsus, metatarsus are normal, also the first, second and third phalanx; the third phalanx is enclosed in one claw instead of two as usual.

I may here mention that this bull was presented to me for



castration (not the abnormal testicle mentioned above, but his two other real testicles!).

The owner, a show-man, presented to me a couple of years ago a bull of nearly the same description for castration, only that one had a pair of testicles on his neck, body of a goat and two small legs attached to it.

THE vacancy on the Missouri State Board of Examiners has been filled by the appointment of Dr. D. B. Morgan, of Neosho. The Doctor is a man of wide experience and doubtless will prove a very efficient member of this Board.

A THREE-TOED HORSE 6,000,000 YEARS OLD: In a clipping from the *Evansville* (Ind.) *Courier* of June 16 (courtesy of Dr. Ferguson) we read of the discovery of the skeleton of a three-toed horse 6,000,000 years old, in the shale fields on the desert, 28 miles east of Mina, Nevada, the announcement being the result of the explorations of Prof. Lawrence Baker, of the Department of Geological Research of the University of California. We are reminded of how young and immature we are.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TETANUS IN A BULL [*H. C. Ganguly, G. B. V. C.*].—Well nourished gray bull had been castrated by the mulling (?) method, and was suffering with tetanus. Very tympanitic, with a temperature of 99 degrees F. the animal breathed laboriously, his eyes were prominent, back arched with slight protrusion of the head and neck. The gait was straddling. The mulled testicles were highly inflamed, red, hard and painful. There were a few deep abrasions of the skin. These symptoms had been present for a week or ten days. The testicular region opened with an incision, let out a great amount of sero-bloody discharge and the tissues within were degenerated and sloughing. Thorough carbolic disinfectants were resorted to. Soon, however, all the muscles of the body were stiff—violent twitchings and tremblings took place. The membrana nictitans protruded. The jaws were locked. The temperature varied between 101 degrees and 102 degrees F. Rectal injection gave some temporary relief, but death occurred three days later, after a continual attack of convulsions which lasted two hours.—(*Veter. News.*)

OESOPHAGOTOMY IN A DOG [*H. C. Ganguli, Jr.*].—A retriever while eating its meal of rice and meat suddenly stops, and since makes frequent attempts to vomit. The next day there is a swelling in the throat. The dog is dull, howled and has the throat surrounded with œdematous infiltration. What is the cause of the obstruction, is found by oesophagotomy, which was performed in the usual way with the animal under the influence of anesthetics. When the oesophagus was slit open, instead of finding ingested matter, a corroded suture needle about 2 inches long, with a thread about a foot and one-half attached was found lying in the lumen of the oesophagus, with the point commencing to pierce its way through. The wounds of the oesophagus were closed with fine silk for the mucous and with catgut for the

muscular coat. The skin was closed with silk. Recovery was uneventful.—(*Vet. Record.*)

RECOVERY OF FOLLICULAR MANGE [*F. Morton Wallis, M. R. C. V. S.*].—The author obtained excellent result in a chronic case of this troublesome disease by the dressing of the skin with the following lotion: Acid sulphurosi, 2 drachms; chlorid. zinc, 80 grains; water, 8 ounces. This is applied after shaving of the skin, thorough cleaning with soap and water. When any of the putules breaks up, a solid stick of silver nitrate is thoroughly applied in the hole.—(*Vet. Journ.*)

ATRESIA OF THE VULVA IN A BITCH *Prof. G. H. Wooldridge, F. R. C. V. S.*].—Fifteen-months-old bitch had a swelling in the perineum. She strains some. The vulval orifice is represented by a small puncture only, which was situated at what would represent the superior commissure of the vulva. A grooved directory is introduced and run down easily for about half an inch. An incision was then made from its lower end to the upper one. Fine sutures were applied on the skin and vulval mucous on each side to prevent the closing of the incision. Rapid recovery followed.—(*Ibid.*)

TORSION OF THE INTESTINE IN A DOG [*H. F. Lewis, M. R. C. V. S.*].—Suspicion of poisoning required the post-mortem of this six-year-old Irish terrior, which was found dead in his kennel. The cause of death proved to be torsion of the small intestine, which was twisted several times upon itself, so much entangled that the use of the scalpel was required to undo it.—(*Ibid.*)

GERSUNY'S WAX OPERATION FOR PROLAPSED RECTUM [*Prof. F. Hobday, F. R. C. V. S.*].—Interesting record of the successful result obtained in a bull bitch two and one-half years old, whose rectum was persistently prolapsed. Under cocaine and adrenalin, after an hypodermic injection of morphia, four pillars of wax were inserted between the mucous and serous coats of the bowel before it was removed. No further trouble occurred and progressive improved condition continued.—(*Ibid.*)

LARGE HEADED NAILS SWALLOWED BY A DOG [*G. W. D. Sargeant, M. R. C. V. S.*].—Young dachshund had pneumonia. Counter irritant is applied on its sides. In the excitement he picked up a number of nails off the side of his box. Half a

pound of stiff suet pudding followed by an oleaginous purgative relieved it. He made excellent recovery.—(*Ibid.*)

PUS IN THE ANTRUM IN DOG [*Prof. F. Hobday, F. R. C. V. S., and Guy Sutton, F. R. C. V. S.*].—For a long time a Yorkshire terrier had a discharge on the right cheek, just under the eye. Treated, it stopped and returned again. Pus in the antrum was diagnosed, the mouth examined and the last molar was found loose. It was extracted. A probe then passed freely from the fistulous opening on the cheek into the mouth. Recovery followed. As a rule it is the last molar but one which is found the cause of similar trouble, in this case it was the last—a rather unusual anatomical interesting condition, not to be forgotten.—(*Ibid.*)

AN ENORMOUS CHONDROMA OF THE RIGHT FORE LIMB OF A CAT [*Prof. G. H. Wooldridge, F. R. C. V. S.*].—This patient had a growth four or five times as big as a man's fist between the humerus, scapula and chest wall. The lower part of the leg is paralyzed. No treatment was possible and the cat was allowed to die with only palliative treatment. Post-mortem, the foreleg was easily taken off from the body. The mass of the tumor appeared cartilaginous with some spicules of bones. It weighed four pounds, nearly as much as the rest of the body of the cat. The humerus had extensive periostitis with deposits round the upper extremity of the bone and down the anterior face of the shaft, similar condition was found on the upper halves of the radius and ulna, including the oleocranon process. The scapula was also diseased. All the articular surfaces were normal.—(*Vet. Journ.*)

DEMODEX BOVIS [*S. N. Mitter, G. V. C. Beng.*].—A peculiar kind of fever among cattle was reported and the author delegated to investigate. The disease manifested amongst a number of sick animals, was characterized by nodules about the size of a pea, spread well over the body. The temperature run for three or four days before this appearance up to 102 degrees and 103 degrees F. The skin was inflamed and surrounded by hemorrhagic zone. The nodules became purulent and the examination of the pus revealed the presence of a large number of demodex in various phases of development. In this outland 75 per cent. of the cattle were affected. No fatal cases occurred. Locally the disease in

India is known as "Kat Basanta." It is reported to occur in that area every year.

PECULIAR LACERATION OF THE TRACHEAL MUCOUS IN A HORSE [*R. Eaglisham, M. R. C. V. S.*].—A few days after being purchased this five-year-old horse is sick. He has high fever, 107 F., pulse 80, and his ailment is diagnosed broncho pneumonia, for which he is put under treatment. After a few days, while the temperature runs down to 105, he is taken with dyspnea, and roars so loudly that he is heard 30 yards away. Tracheotomy is performed. The finger introduced feels in the trachea a membrane almost blocking the lumen of the wind pipe. The tracheotomy tube introduced had to be taken off as it increased the difficulty in breathing. Gradually the horse grew worse and died the fourteenth day from the beginning of his illness. At the post-mortem "the trachea was found divided throughout its entire length by a transverse septum formed by the mucous membrane on the posterior or upper part of the tube, being torn from the fibro-elastic membrane forced downward." This membrane was red and inflamed, the lungs showed lesions of pneumonia.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FEMORO-TIBIAL ARTHRITIS AND FEMORAL OSTEOMYELITIS [*Capt. C. Leslie, Army Veterinarian*].—A fourteen-year-old horse received a kick on the internal face of the left shank. There is a little wound on the superior extremity of the tibia with swelling running up to the left stifle joint. The horse is very lame. A wide blister is applied and the wound dressed with iodine. The leg is, however, the seat of lancinating pains, which do not subside, although repeated counter-irritation is applied, and yet the swelling has diminished and the wound healed. There is a very painful exostosis of the upper epiphysis of the tibia. Hot brick applications seem to give some relief. The wasting of the muscles of the leg is very marked and electricity applied. Notwithstanding all, the condition of the animal grew worse, and finally he was sold to a butcher.

Post-mortem revealed extensive lesions of osteitis, of arthritis and osteo-myelitis. The superior extremity of the tibia was covered with osteophytes. In the femoro-tibial joint, although there was no effusion, there were extensive lesions involving the tibia,

the menisci and the patella. The synovia was thick and rosy in color. A longitudinal section of the femur exposed handsome lesions of osteomyelitis.—(*Bullet. de la Soc. des Sc. Vet. de Lyon.*)

TRAUMATIC ARTHRITIS OF THE RIGHT ANTERIOR FETLOCK [*Mr. Bel, Army Veterinarian*].—*Fulton*, a six-year-old horse, breaks loose from his picket, runs away and when caught has a wound on the external face of the right fore fetlock, which produces great lameness. This is disinfected with peroxide, dressed with iodine tinct., and a wadding dressing applied. The next day great swelling of the parts which are hot and painful, synovia escapes freely. Slings and blistering of the fetlock. Solution of hermophenyl 10 p. 1,000 is injected twice a day. Hydrophile wadding dressing. Same condition for a few days and the temperature goes up 39 degrees C. Cold water irrigations are used. As fever keeps going high (40 degrees C.) baths of cresyled water are used instead of the irrigations and injections of hermophenyl done three times a day. After a few days as there is no improvement, a pencil of hermophenyl in the fistulous tract is added to the injections. Soon the synovial escape is arrested by formation of a clot, the fever subsides and the improvement sets in. Recovery followed afterwards without trouble.—(*Ibid.*)

CURIOUS CASE OF DYSPHAGIA IN A DOG [*Mr. D. Bonnigal*].—Returning from a walk a dog is taken with violent spells of sneezing and he constantly rubs his nose with his paws as if anxious to remove a foreign body. He remains in that condition for three days and then refuses all kinds of food. He has no fever, no discharge from the nose, the sneezing is gone but the dog refuses to eat and it is with great pain that he is made to swallow some spoonfuls of milk. The mouth is carefully examined and seems to present nothing abnormal except a small yellowish body which seems to push its way into the cavity. Secured with a pair of forceps, it is pulled out. It is a hard bit of straw, 11 centimeters long, which had probably been sniffed up in the nasal cavities, protruded in the pharynx and was sufficient to prevent deglutition. As soon as it was moved, the dog went eating without difficulty.

CHRONIC NEPHRITIS IN A HORSE—DEATH FOLLOWS [*Mr. Rousseau, Army Veterinarian*].—This ten-year-old horse has poor appetite, he looks in poor condition, his droppings are small,

hard and at times a little bloody. He has no fever. Pulse is good, respiration normal—he is taken on treatment as having enteritis. Under proper diet his appetite improves, but is still capricious. Bicarbonate of soda is prescribed. The symptoms seem to subside some, yet his manure remains about the same. The horse eats fairly, but his general condition gets worse. He loses flesh rapidly, stands with his four legs brought under him, the sheath is swollen. Auscultation and percussion are negative. Examination of the urine shows absence of sugar or albumen. While the treatment with the bicarbonate of soda is kept up, malleine as injected, but gives only a negative reaction. Thirty-six hours after this injection the horse is paralyzed behind and finally dies the next day. At the autopsy were found: Small aseptic collection in the abdomen, digestive canal normal, kidneys show the histological lesions of chronic nephritis, bladder congested. In the thorax the lungs are emphysematous, pericardium the seat of pericarditis, heart contains fibrinous clots. Death was due to the intoxication following the injection of malleine.—(*Journ. de Zootech.*)

MEDIATE CONTUSION PRODUCES BURSTING OF THE CAECUM [*Mr. J. B. Piot-Bey*].—At the start of a race this nine-year-old Arab thoroughbred is violently thrown against a wooden post, on his right side and falls down with his rider. He gets up without trouble and is removed with an ambulance, when he is taken in a box stall. He lays down on the left side, his body is covered with perspiration, breathing is accelerated and loud, reflexes of the cornea are absent. On the right side of the body, near the elbow and the stifle, there are few cutaneous abrasions. The walls of the thorax and of the abdomen are normal, without indications of fracture or muscular ruptures. The horse died a few hours after the accident. The post-mortem revealed the ribs and their cartilages intact, bloody extravasation on the costal and abdominal region. In the abdomen all the organs are extensively congested and food is spread on their surface. The caecum is the site of a wide laceration, beginning about 20 centim. from the front of the organ and large enough to allow the introduction of a hand widely open. It measures over 10 centim. The lungs are normal. The heart is very large but without any apparent lesion.

It is supposed that the caecum more or less full with liquids suddenly burst open upon the enormous pressure of the contusion against the wooden post.—(*Bullet. de la Soc. Cent.*)

PULMONARY NEOPLASM IN A COW WITH SYMPTOMS OF PERICARDITIS BY FOREIGN BODY [*Mr. H. Carre*].—This very old subject presents all the symptoms of traumatic pericarditis. Closer examination reveals besides limited dullness on the precordial region of both sides of the chest, nothing abnormal in the lungs, rough breathing on the left side and mucous râles on the right. Superficial lymphatic glands are swollen, the prescapulars are the size of the fist. Pulse is 72; respiration a little accelerated. Temperature is normal. Tuberculin test is negative. Puncture of the pericardium gives few cubic centimeters of hemorrhagic fluid. Second puncture renewed a few days later is negative. It was only pseudo-pericarditis. A treatment of iodide of potassium was prescribed with Fowler's solution. But death occurred before the effects could be of any value. At the post-mortem, the apex of the right lung was enlarged and covering the trachea, while the left is pushing the heart backward and to the left. The right apex contains neoplastic nodules as big as the fist, rather soft, yellow in color. Two of these are abscesses. The walls of the right auricle has a tumor as big as an apple with the same characters as those of the lungs. Bronchial and oesophageal glands are hypertrophied, contain also small similar nodules. No tuberculosis. Histological examination of the various neoplasms brought out their nature of globofuso-cellular sarcoma.—(*Rev. Gen. de Med. Vet.*)

FATAL DIAPHRAGMATIC HERNIA—SUBACUTE MEGALOSPLENIA [*Dr. Huguier, Army Veterinarian*].—This mare is taken with colic. She is soon covered with abundant cold perspiration. The face is contracted, nostrils dilated, extremities are cold. Visible mucous membranes are pale, pulse imperceptible, respiration accelerated—no alvine evacuation. Diagnostic, internal lesion with hemorrhage. Death takes place half an hour after. All subcutaneous tissues are pale except the muscles which are purplish color. Lungs are bloodless. Heart hypertrophied. Diaphragm has a tearing from the phrenic center to the costal insertions on the left side and the pectoral and abdominal cavities communicate together. Through the rupture, the spleen, the seat of an enormous hypertrophy has passed in the chest and fills up the diaphragmatic laceration. The spleen weighed 14 kilogs., 800 grams. It is gorged with blood forming an enormous magma. The rupture of the diaphragm was with the internal splenic hemorrhage the cause of death. With the exception of a congested condition of the intestines, all the organs were normal.—(*Bullet. de la Soc. Cent.*)

BREEDING PROBLEMS.

The announcement of the Editor of the AMERICAN VETERINARY REVIEW, that he will open a new department in this journal for report and discussion on "Breeding Problems," must be approved and welcomed by every veterinarian of this country.

It constitutes a timely move, and one that will result in cultivating a branch of our profession that has been neglected. We need not censure anyone for this neglect. It resulted from the gradual development and extension of our science and practice, which dates not much further back than a half-century. Going slowly at first, as a new-born profession always does, we had to take hold first of the fundamental branches of medicine and surgery, which called for immediate application and made for a living. One branch of our profession has since been added to another, until the times are now ripe for making the "Breeding Problem" one of our problems; to set about to win "Breeding Work" as a legitimate branch of our American veterinary profession; and to discuss it in our professional journals as we discuss all other subjects that are part of the whole of our science.

In the endeavor to do so, we can well afford to learn some lessons from our European confreres who have since long conquered this field as a distinct part of the domain of veterinary science. It was not without long and strong opposition from those who considered themselves pastmasters of this art that the veterinarians across the Atlantic have firmly established themselves in the realm. Beginning feebly, nearly one hundred years ago, in assisting, advising and supervising the breeding operations of horses for the armies of Europe, they gradually obtained such conspicuous results that opposition ceased, and acknowledgment of the superior ability of the veterinarian in this sphere of work has since come freely from their governments and from the people directly interested. Somewhat later the veterinarians in civil, official positions and the rural practitioners extended their helping hand to the breeding industry of live stock generally, with nearly equally good results, so that to-day we find in European countries not only veterinarians with office and titles of "director of government studs," but also many others who function as "inspectors or supervisors of live-stock breeding."

When we consider that all these positions were originally occupied by men of social and official prominence; that, for instance, the directors of government breeding studs had been, for generations, retired generals of the army belonging to the high, landed aristocracy of the country; and that the study of the theories of breeding and its practice as an art had been the vested privilege of the agriculturist of means for thousands of years, as history attests; then we can fully realize the great victory won by our foreign confreres, and can survey the field that is open to us in this country to extend our usefulness and earn acknowledgment and reward.

In trying to make "breeding work" a success, we must realize from the start that there are some differences in the standpoints on breeding questions between the farmer-breeder and the veterinarian. Breeders, unless they are wealthy fanciers and can afford costly experiments, look upon this industry more from the economic and commercial standpoint; they are influenced by local views and conditions and partial to their breeding stock. The veterinarian is dominated by his knowledge of anatomy, physiology, pathology and hygiene, and he is impartial as he seldom is as a breeder for profit. These different standpoints do not necessarily oppose each other. With wisdom and skill they can be made co-operative, but they certainly have often lead to objections, antagonism or open fight by one party or the other, until both have learned by observation and experience that one can safeguard and help the interests of the other.

We must make liberal concessions to the farmer-breeder about the important part of the work he is to play in breeding operations for his own benefit and the benefit of the country at large. The breeding of horses and live stock generally, like all other products of the soil and pursuits of men, are sources of national prosperity, or failing, may become a national calamity. This is the broad view that must be taken on the breeding problems by all parties concerned, the breeder as the producer, the veterinarian as his advisor, the user as a consumer, and the state as a protector.

To do efficient work in this realm, we must divide our work into sections. It is one thing to be a successful worker in the biological laboratory studying embryology and trying to unfold the still unexplained facts of fecundation and the functions of the reproductive organs generally. A great field of research is there open. It is another thing to understand and teach the

theories of practical breeding, so numerous, interesting and quite valuable; it is yet another thing to apply our veterinary knowledge to the often demanded practices in assisting in the acts of copulation, during pregnancy, at birth, and to prevent or successfully treat the defects and specific diseases of the new-born and growing animals. But the important fact we have yet to learn ourselves and to preach to our farmer-breeders is the broad, scientific fact, in its innumerable details, that not every country or part of country can produce every kind of breed; that all species, varieties, breeds, etc., of domestic animals are confined to restricted environments, to particular soils and climates, if they are to strive and survive; that in North America and in sections thereof, comprising larger or smaller areas, only such breeds can be maintained with profit and constancy that have survived and have permanently adjusted themselves to similar environments somewhere else. Such animals can produce true types as to size, shape, weight, temperament, color and organic peculiarities needed for certain climates and particular purposes. Or to use an illustration: We should, as veterinarians, prevent our breeders from importing the tall, heavy-weight Clydesdale stallion into the arid, hot, dry and rocky sections of Texas, Arizona, New Mexico to produce a farmer's draft-horse, because this horse is a product of a soil luxuriant in grain, cool in climate and demanding heavy work. We should warn other breeders that they cannot perpetuate the lightweight, fleet Arab horse in the cold and moist north, because he is unprotected against cold by his fine coat of hair, and his capacious lungs with wide-open air-passages expose him to danger not present in his warm, dry native country, which necessitate constant migration for food. The Clydesdale belongs to the north and the Arab to the southwest and not vice versa.

The general ignorance of these facts among the breeders of this country has led in the past to that haphazard breeding and production of useless horses that has lately been so much criticized, and that the well-informed veterinarian can explain as due to the introduction of parent-stock into wrong environments, resulting in the offspring paying the penalty of degeneration, decay or even extinction. We cannot always keep on trying to produce breeds by constantly importing breeding animals from countries where they have become fixed types and let the progeny go to waste in our country. Of the millions of horses in the United States there are thousands upon thousands of this useless kind.

The above thoughts may serve as an introduction into the

subject and as an attempt to point out the many sides of the question before us, as looked upon from the standpoint of veterinary science. They may likewise encourage the young men of our profession, who have yet their life-work before them, to embrace a veterinary branch which is still new in this country, but one that is bound to develop because needed, and one that will pay in coin and honors to those among us who have the faculty to study breeding deeply and the ability to direct their learning into practical channels of successful application.

OLAF SCHWARTZKOPF.

THE Missouri Veterinary Medical Association will convene at Marshall, Mo., at 9.00 a. m. on Monday, July 29, and continue two days. The following papers have been promised: "Snap Shots by a Beginner in Practice," Dr. D. F. Luckey, Bloomfield; "Common Animal Parasites Found in Missouri" (lantern slide illustrations), Dr. A. T. Kinsley, Kansas City; "Death of Mules Due to Parasites," Dr. Horace Bradley, Windsor; "My Experience in Immunizing Against Hog Cholera," Dr. F. M. Starr, Odessa; "Removal of Urinary Calculi," Dr. J. H. MacCartney, Joplin; "Canine Practice," Dr. J. C. Flynn, Kansas City; reports of cases: Dr. Carl F. Fischer, Garden City; Dr. W. E. Neil, Kirksville; Dr. O. Stuart, Paris; paper, title not given, Dr. J. W. Connaway, Columbia.

A banquet will be served at the Elks' Home on Monday evening, and the meeting will be terminated by a clinic at the hospital of Drs. Welch and Blosser, Tuesday afternoon.

This promises to be a largely attended meeting because the problems of uniform sanitary regulations and uniform certificates of health will be presented to the membership by the State Veterinarian, Dr. S. Sheldon.

There is a lively interest in proposed modification of the present Practice Act, and every veterinarian in the state is urged to participate in this meeting with the view of arriving at a working understanding that something definite may be accomplished.

THE PUBLISHED PROCEEDINGS OF THE SIXTEENTH ANNUAL MEETING of the Indiana Veterinary Medical Association, recently received, is a credit to that active organization, and to those whose duty it has been to edit and publish it. It makes a valuable little booklet that every member of the association should be proud to possess and preserve.

OBITUARY.

ALBERT T. LEACH, M. D. V.

Dr. Albert T. Leach died at the home of his parents, in Somerville, Tenn., on Tuesday, May 21, 1912, after a year's illness. Dr. Leach was born in Somerville, Tenn., December 21, 1881, and was educated in the public school of that place, and the Branhamard Hughes school of Spring Hill, Tenn. He was graduated from the McKillip Veterinary College in 1909 after a three years' course of studies in that institution, receiving the degree of doctor of veterinary medicine (M. D. V.). His home life was the best, his love and consideration for mother and sisters beautiful. This kind trait in his character, and his ability as a veterinarian, was fast building for him a place high up in his profession, when ill health overtook him and resulted in his untimely death at the age of 30 years. He is survived by a father, mother, two sisters and six brothers.

CHARLES RADCLIFFE FAIRCHILD, D. V. M.

Dr. Charles Radcliffe Fairchild met his death on February 29 last in the 26th year of his life, by being struck by a train while driving across the New York Central Main street crossing, at Bergen, N. Y. Dr. Fairchild was born in Binghamton, N. Y., March 25, 1886, but at an early age came to West Winfield, Herkimer county, where he received his early education, graduating from the West Winfield High School in June, 1907. He entered the New York State Veterinary College at Cornell University, the fall of the same year, from which institution he graduated in June, 1910. On receiving his degree in veterinary medicine, he went to Gowanda, N. Y., to take charge of the practice of Dr. J. V. Hills of that place, during his absence abroad. Dr. Fairchild came to Bergen, N. Y., in September, 1910, where he practised until the time of his death, and was making a large number of friends and building up a good practice. The doctor was married May 17, 1911, to Miss Viola A. Ross, of Bergen, who, with an infant daughter, Ruth Evelyn Fairchild, survive him.

CORRESPONDENCE.

HILLSBORO, O.

Editor AMERICAN VETERINARY REVIEW, New York:

In March number, page 806, a "curious case of cryptorchidy" is related, translated from the French. The case is called a "quadriorchidy" and claimed to be the first.

After reading it carefully, I am convinced the "small body" removed from each side was nothing more than an enlarged epididymis.

I have known cases that had been similarly operated upon and afterward had to be really castrated.

Yours truly,

S. R. HOWARD.

TAMPA, FLA., June 9, 1912.

Editors of AMERICAN VETERINARY REVIEW, New York, N. Y.:

In reply to Drs. Deavenport and Heiny, of Mississippi, as to their case of paresis, I can say that in my short experience of eight years in and around Tampa, Fla., I have found such cases as they report not unusual, and the air pressure treatment always successful. I well remember my first case of this class, for it fooled me for three days. The cow was not down, but staggered some when forced to move, rumination suppressed and the animal constipated. These symptoms I read as digestive disturbance and so treated. There was no recent calf, nor was one expected. On the third day I entered the yard about noon, found the cow down, lying in normal position, but unable to rise when called upon to make the effort. I then decided to try inflating the udder as a last resort. The animal was up and apparently normal that evening and gave no further trouble. Since that experience I have never hesitated to use the air treatment where there is any indication of paresis, unaccounted for by traumatism or some other equally well marked condition. I have had one case in a non-pregnant cow, where the last calf was a yearling or older. This animal had been down more than twenty-four hours when I was called to the case. All the neighbors, including a dairyman or two, who really did know from which end of a cow the milk came, had

told the owner his cow must die. Inflated the udder about six o'clock in the evening, cow was up at midnight and ready for breakfast the next morning. I have treated one case within a month, where the last calf was six months old and the cow, if pregnant, of recent conception. History of having eaten some canteloupes, but no apparent disturbance, except that the bowels were loose. Unable to do anything but sway the body, when asked to rise. Inflated udder at noon, cow was still down that evening but comfortable, so let her alone; up and all right the next morning. I usually have several such cases in the course of a year. My most prolonged case was in a member of an Italian dairy and the paresis did follow parturition in the usual manner. She was down a full week, during which time I inflated the udder every day. She finally got up and made a good recovery. My most pronounced case was also truly p.p.p. It was during our rainy season, in the summer of 1907. Again in the middle of the day I was called to a cow which I found in a Cuban's back yard with water ankle deep in the dry places. When I looked over the fence, I saw the cow lying on her right side, with the left flank looking like a balloon and no breathing that I could see. I told the people that she was dead; they said no, so I went on in. Close inspection showed that she was breathing, or getting an inspiratory movement about once in thirty seconds; the eyes were glazed and did not react when touched with the finger. I then told the owner, talking through an interpreter, that if his cow was not dead, she soon would be, but that I would try, if he so desired. They said to do all I could. My first move was the trocar, then inflation and then hypodermically, a cardiac tonic. By this time my cow was breathing almost normally and had come up onto her sternum. There was a swarm of Cuban onlookers and we got enough of them to place the animal on some tobacco sacking and carry her under a shed that only leaked between the boards. That evening she was up and out of the paralyzed condition. She developed a case of pneumonia and I pulled her through that, and when I was paid the owner was well enough pleased to present me with a quart bottle of imported brandy.

In my estimation, the term parturient paresis is wrong. Cerebral anemia comes much nearer describing the condition. Any exciting cause that will take the normal supply of blood away from the brain will produce it. An article published some time ago in the REVIEW, I think by a German correspondent, cited cases occurring in cattle just off railroad shipment. In this

region almost all our dairy cattle are high-grade Jerseys and we produce none of our own feed stuff. Consequently our cattle receive little or no succulent feed, their diet being almost entirely nitrogens and carbohydrates. These, of course, are intended to, and do, increase the activity of the lacteal glands and may, in a measure, account for the not uncommon paralytic condition that I find.

FRED W. PORTER, D.V.M.

ARMY VETERINARY DEPARTMENT.

The work for the passage of the Army Veterinary bill is progressing steadily. Chairman Hoskins of the legislative committee, American Veterinary Medical Association, reports that it will be necessary to obtain a two-thirds vote in the House of Representatives to push the bill forward on the calendar. He has no fear of the ultimate outcome of the bill in the House, as about 200 members of the House are pledged in support of the bill.

More than 40 Senators are also pledged, but otherwise the situation in the Senate remains one of anxiety, as it seems difficult to get action on the bill by the sub-committee in charge of the bill.

There are several reasons why the bill should be passed during the present session of Congress, the main being that opposition other than congressional may spring up during the next session. While it is impossible to predict, at this writing, what will be really accomplished during this session, on account of the political turmoil in which Congress finds itself now, there are indications that Congress may remain in session well into the month of July, which will extend the time for work and be in favor of the persistent efforts of Chairman Hoskins in behalf of this bill.

O. S.

DR. ARTHUR TRICKETT has joined the firm practicing in connection with the Kansas City Veterinary College, which now consists of Drs. S. Stewart, F. F. Brown, J. V. Lacroix and A. Trickett. Dr. Trickett has been practicing in Kansas City for the past 10 years and has established an excellent clientele.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of this association was held in the Berns Veterinary Hospital, 74 Adams Street, Brooklyn, New York, June 5.

The minutes of the May meeting were read and approved. The resignation of Dr. Wilfred Lellmann was unanimously accepted.

Dr. D. J. Mangan, of New York City, was then introduced, and read an original, exhaustive, scientific paper entitled "Auto Therapy." Its application in the treatment of septic diseases in horses. Dr. Mangan stated that he has been working along this line of treatment since last September, having been induced to do so by reading of the wonderful results obtained by this form of treatment, as originated by Dr. Chas. H. Duncan, Attending Surgeon, Volunteer Hospital, New York City.

It will be superfluous to quote from Dr. Mangan's article in these minutes, as it will be published in full before these minutes are read to the members at the October meeting.

Dr. Chas. H. Duncan followed Dr. Mangan, and read an excellent paper, going into the detail of this form of treatment as used by him in human practice. Dr. Duncan has been working and experimenting with this treatment for about five years, and has had some wonderful results in cases that were considered hopeless.

Dr. Duncan stated that this form of treatment was first used by a veterinarian in Europe by the name of Lux, in the treatment of sheep in 1822, but when he tried to get results in another province, he failed, and was puzzled by his failure. Dr. Duncan explained that Lux's failure was due to using his original solutions of pus and scab in a different locality where the infection probably differed.

It is due to this same reason that results from the so-called stock bacterins are so doubtful.

When Dr. Duncan had concluded his remarks, Dr. Berns expressed his appreciation of the excellent papers presented, and stated that in view of the fact that the subject was entirely new

to nearly every one present, that it would be best to defer the discussion of this subject till the October meeting, so that the members might read and digest the same.

Dr. R. W. Ellis, in a few well chosen remarks, expressed the appreciation of all present of the exceptional character of the programme rendered by Drs. Mangan and Duncan, and supplemented his remarks by reminding the gentlemen present of an article by Professor Liautard in the *AMERICAN VETERINARY REVIEW*, of two or three years back, on *Autoserotherapy* and its application in the treatment of pleurisy; finally moving that a vote of thanks be tendered both gentlemen. This was unanimously carried.

Dr. R. H. Kingston cited a case of hydro-thorax in a horse from which a large quantity of serum was drawn off the first day, and on the second day seven quarts were drawn off. Forty c.c. of this serum was injected in each shoulder two days in succession. The results in this case at present are that the formation of fluid seems to have been checked and the temperature is reduced to normal. Animal is also eating well.

Dr. Mangan also cited a case of hydro-thorax in which he re-injected the serum with complete recovery resulting.

Dr. Berns stated that he would announce the appointment of delegates to the New York State and the American Veterinary Medical Associations at a later date.

The Surgical Division of the programme consisted of several very interesting operations, and an exhibit of convalescing surgical cases.

Case No. 1. Roan Gelding. Punctured wound of the foot. Placed on table and resection operation done by Dr. R. W. Gannett.

Case No. 2. Brown Mare. Lamé, due to bony growth, resembling a spavin, on the knee. Placed on the table and Median Neurotomy performed by Dr. Chas. E. Clayton. This mare moved sound when removed from the table.

Case No. 3. Grey Gelding. Punctured wound of the foot in the region of the bar, with a sinus running through to hollow of the heel, also the lateral cartilage involved. Placed on the table and operated on by Dr. H. B. Risley.

Convalescing cases exhibited by Dr. Berns.

Case No. 1. Bay Gelding. Open navicular bursæ. Operated on May 3, 1912, by Dr. R. W. Gannett. Very nearly healed and stepping good.

Case No. 2. Bay Mare. Quittor. Operated on April 28 by Dr. H. B. Risley. This mare is still lame, due to a ring bone, which the doctor intends to fire and blister. The Quittor operation was successful.

Case No. 3. Bay Gelding. Open coronary pedal joint. Operated on May 4 by Dr. R. W. Gannett. Doing nicely.

Case No. 4. Bay Gelding. Laryngeal Hæmiplegia. Operated on by Dr. H. B. Risley May 10, 1912. Present indications point to a complete success.

Case No. 5. Chestnut Gelding. Punctured wound of the foot, involving the navicular joint. Bad case. Operated on May 30, 1912, by Dr. H. B. Risley, who found the foot in such bad condition that he removed the navicular bone with his fingers. Considering the case hopeless the foot was temporarily bandaged, and the animal returned to a box stall to be destroyed in the morning. The horse appeared so much better and brighter in the morning that he was again placed on the table and the operation completed. The indications are now that a recovery will take place.

Case No. 6. Grey Gelding. Lacerated wound of hip. Operated on by Dr. Geo. H. Berns. Doing well.

Case No. 7. White Gelding. Quittor. Operated on April 3, 1912, by Dr. R. W. Gannett. This case was doing nicely; and almost ready to be discharged. This animal was regarded with a great deal of interest, as Dr. Berns stated that eight years ago this horse had a bad attack of hydro-thorax. Seventy quarts of serum was removed from the chest cavity.

There were forty-five members and visitors present, and it was conceded by all to have been a very interesting and successful meeting.

As the meeting adjourned at midnight, Dr. Berns was saluted with three rousing cheers, showing the appreciation of the members of the association toward the genial host of the evening.

R. S. MACKELLAR,
Secretary.

SOCIETY OF COMPARATIVE MEDICINE, NEW YORK STATE VETERINARY COLLEGE.

Monthly meetings of the Society of Comparative Medicine have been held regularly during the spring semester. A few of the seniors have read papers upon various topics pertaining to Veterinary Medicine before the Society.

Dr. J. H. Taylor, of Henrietta, N. Y., spoke before the student body at the College, April 12. His subject was "Valuable Hints for the Veterinarian."

Dr. F. H. Miller, of New York City, university trustee, was here April 26 and gave the veterinary students a very instructive address upon "Canine Diseases and Their Treatment."

Dr. David W. Cochran, of New York City, read a paper before the veterinary student body May 17 upon "The Principles of Horseshoeing." Some very interesting specimens of horseshoeing were presented to the college museum by Dr. Cochran.

The Society gave its annual dance in the Masonic Hall, May 2.

The last meeting of the Society was held in the College auditorium May 22. President J. K. Bosshart gave a short address and presented the members of the senior class with the shingles of the Society. Dr. Moore, Director of the College, gave a talk in which he emphasized the work of the alumni in alumni associations as to their value to the College, to the Veterinary profession, and to the Science of Veterinary Medicine and urged that each alumnus become an active member of some prominent veterinary association.

Mr. W. C. Buck, 1912, spoke upon "The Athletics of 1911-1912."

The following members were elected to office for the ensuing term: President, Mr. A. C. Goff, 1913; Vice-President, Mr. N. E. Koenig, 1913; Secretary, Mr. A. L. Smith, 1914; Athletic Manager, Mr. F. H. Schaeffer, 1913; Assistant Athletic Manager, Mr. J. Vara, 1914; Treasurer, Mr. J. A. Harris, 1914; Corresponding Secretary, Mr. D. W. Clark, 1913.

R. RAY BOLTON,
Corresponding Secretary.

THE new Mayor, Mr. H. J. Arnold, of Denver, Colo., is to be congratulated in breaking away from ward politicians in making his appointments of milk inspectors and meat inspector.

He has recently appointed Dr. M. J. Warner Chief Meat Inspector, Dr. P. Guyselman and Dr. E. A. Grubb Milk Inspectors. These three doctors are graduates of the Division of Veterinary Medicine, Colorado State Agricultural College, year 1912.

NEWS AND ITEMS.

DR. R. F. BOURNE, of Kansas City, and wife are making a tour through the Yellowstone Park.

DR. O. W. COLLINS, Magnolia, Ark., says, in renewing his subscription: "I find that I could not practice veterinary medicine without the REVIEW."

VETERINARY NOTES, Volume V., Number 3, June, 1912, is a particularly interesting number, the perusal of which will prove valuable to veterinary practitioners.

THE CORNELL VETERINARIAN, Volume II, No. 1, is not only up to the standard set in the first number issued, but far exceeds it, and we congratulate its editorial staff on their work in its production.

Dr. S. Forrest Musselman, Cynthiana, Ky., in renewing his subscription to the REVIEW says: "I am glad to do this, as I enjoy the REVIEW and get so much valuable information from it. I feel that I am getting all my money's worth. Hoping that the REVIEW will continue in the same way, and reach me promptly, I beg to remain, etc."

DR. R. C. LONGFELLOW OF THE TOLEDO CLINICAL LABORATORIES is doing a great amount of work in the preventive treatment of rabies in human beings, in addition to his general clinical laboratory work in diagnostics and the preparation of biological remedies for both physicians and veterinarians; and we have found his letter issued to his patrons under date of June 1 instructive.

DR. WM. V. LUSK, Second Cavalry, and Dr. Burt English, Second Cavalry, arrived in San Francisco on June 15, 1912. They are to be stationed with their regiment at Ft. Bliss, Tex. For the past two years they have been stationed in Mindanao and Sulu, Philippine Islands, the latter being the extreme southern limit of the stations of American troops.

THE next annual meeting of the Iowa Veterinary Medical Association will be held at the Iowa State College, which will be the occasion of the dedication of the new veterinary buildings and the celebration of the 25th anniversary of the Iowa Veterinary Association.

THE commencement exercises of the Colorado Agricultural College were held in the college chapel Thursday, June 6, 1912. The following students having completed their work in veterinary medicine, were granted the degree of Doctor of Veterinary Medicine: Brill, J. A.; Carroll, A. N.; Converse, C. W.; Egan, P. H.; Griffith, A. H.; Grubb, E. A.; Guyselman, P.; Paxton, J. D.; Warner, M. J.; Williams, C. V.; Willis, H. W.; Wright, G. A. Mr. Wright also received the degree of Bachelor of Science, having also completed that course.

TWENTY-FIVE THOUSAND DOLLARS FOR ONTARIO'S VETERINARY COLLEGE: The Dominion in its grant to aid Ontario agriculture, has provided \$25,000 for the purchase of additional land for the new Ontario Veterinary College. This purchase will be about double the size of the lot purchased last year, and will give the land necessary to finish out the block of the present L-shaped site, with a view to later extending the college to be a Dominion institution; the aim being to broaden its work, and to keep it the centre of veterinary knowledge in Canada. At present it is the only college of its kind in the Dominion.

INVESTIGATIONS OF THE ETIOLOGY OF INFECTIOUS ABORTION OF COWS AND MARES is the subject treated of in *Bulletin No. 165*, Kentucky Agricultural Experiment Station, April 1912. From a perusal of this bulletin it becomes evident that Prof. E. S. Good has not only confirmed Bang's work as to the etiology of the disease in cows, but has determined the cause of the disease in mares. He has given in this bulletin the cultural characteristics of the *abortus bacillus*—Bang, in detail; also methods of isolating the bacillus from the uterine exudate of aborting cows, as well as from the internal organs of the fetuses. This is probably the first publication in the United States giving illustrations of the morphology of this germ, as well as its cultural characteristics, and is of extreme interest to veterinarians. We understand that a copy of this bulletin can be obtained free of charge until the supply is exhausted by applying to the director of the station, Dr. M. A. Scoville, Lexington, Ky.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Week Aug. 26,'12	Indianapolis..	C. J. Marshall, Philadelphia
Arkansas Veterinary Ass'n.....	.....	Lec. Room, La-	J. B. Arthur, Russellville.
Ass'n Médéciale Veterinaire Fran-	1st and 3d Thur.	val Un'y, Mon.	J. P. A. Houde, Montreal.
çaise "Laval".....	of each month	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	S. Omaha, Neb	E. J. Jackson, So. Omaha.
B. A. I. Vet. In. A., So. Omaha..	3d Mon. ea. mo.	San Francisco.	J. J. Hogarty, Oakland.
California State V. M. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central Canada V. Ass'n.....	.....	Syracuse	W. B. Switzer, Oswego.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Chicago	D. M. Campbell Chicago.
Chicago Veterinary Society.....	2d Tues. ea. mo	Denver	B. F. Kaupp, Ft. Collins.
Colorado State V. M. Ass'n.....	Jan., 1913.....	Hartford	B. K. Dow, Willimantic.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Wilmington ..	A. S. Houchin, Newark, Del.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	.....	J. H. Taylor, Henrietta.
Genesee Valley V. M. Ass'n.....	.....	Atlanta.....	P. F. Bahnsen, Americus.
Georgia State V. M. A.....	Dec. 21-22, 1911.	Wash., D. C..	A. T. Ayers.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	.....	Louis P. Cook, Cincinnati.
Hamilton Co. (Ohio) V. A.....	.....	Boise.....	G. E. Noble, Boise.
Idaho Ass'n of Vet. Graduates....	Oct. 10-12, 1911..	Springfield ...	L. A. Merillat, Chicago.
Illinois State V. M. Ass'n.....	July 9, 1912. ...	Indianapolis..	A. F. Nelson, Lebanon.
Indiana Veterinary Association...	Jan. 15-16, 1913..	.....	C. H. Stange, Ames.
Iowa Veterinary Ass'n.....	.....	Topeka.	J. H. Burt, Manhattan.
Kansas State V. M. Ass'n... ..	January, 1913...	Lexington ...	Robert Graham, Lexington.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	.....	E. H. Yunker, Phila.
Keystone V. M. Ass'n.....	.....	Portland.....	E. P. Flower, Baton Rouge.
Louisiana State V. M. Ass'n.....	.....	Baltimore.....	C. W. Watson, Brunswick.
Maine Vet. Med. Ass'n.....	July, 1912.....	Young's Bost'n	H. H. Counselman, Sec'y.
Maryland State Vet. Society.....	.....	Mich. Agr. Col.	J. H. Seale, Salem.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Minneapolis..	Judson Black, Richmond.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	.....	G. Ed. Leech, Winona.
Minnesota State V. M. Ass'n.....	July 10-11, 1912.	.....	Wm. P. Ferguson, Grenada.
Mississippi State V. M. Ass'n....	.....	Marshall	Hal. C. Simpson, Denison, Ia.
Missouri Valley V. Ass'n.....	.....	Bozeman	S. Stewart, Kansas City.
Missouri Vet. Med. Ass'n	July 29-30, 1912..	Lincoln.....	A. D. Knowles, Livingston.
Montana State V. M. A.....	Jan. 29-30, 1912.	Utica.....	W. H. Tuck, Weeping Water.
Nebraska V. M. Ass'n.....	January, 1912....	Raleigh.....	H. J. Milks, Ithaca, N. Y.
New York S. V. M. Soc'y.....	Jy 30-31, Aug. 1.	Fargo.....	M. J. Ragland, Salisbury.
North Carolina V. M. Ass'n.....	June 1912	Lima.	C. H. Babcock, New Rockford.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	.....	A. J. Kline, Wauseon.
North-Western Ohio V. M. A.....	Feb. and Nov...	Up'r Sandusky	Reuben Hilty, Toledo.
Ohio State V. M. Ass'n.....	.....	.....	F. F. Sheets, Van Wert, Ohio.
Ohio Soc. of Comparative Med..	Annually	Okla. City....	J. C. Howard, Sullivan.
Ohio Valley Vet. Med. Ass'n.....	.....	Toronto	C. E. Steel, Oklahoma City.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	.....	C. H. Sweetapple, Toronto.
Ontario Vet. Ass'n.....	April, 1912.....	Manila	John Reichel, Glenolden.
Pennsylvania State V. M. A.....	September, 1912.	Portland, Ore.	David C. Kretzer, Manila.
Philippine V. M. A.....	Call of President	Mon. and Que.	Sam. B. Foster, Portland, Ore.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Providence ...	Gustave Boyer, Rigaud, P. Q.
Province of Quebec V. M. A.....	.....	Centralia	J. S. Pollard, Providence
Rhode Island V. M. Ass'n.....	Jan. and June..	.....	Clarence E. Smith, Greenville
South Carolina Ass'n of Veter'ns	.....	St. Louis.....	F. Hockman, Louisville.
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Reading	Wm. T. Conway, St. Louis, Mo.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the	Philadelphia..	W. G. Huyett, Wernersville.
Schuylkill Valley V. M. A.....	2d Sun. ea. mo.	Aberdeen.....	B. T. Woodward, Wash'n, D. C.
Soc. Vet. Alumni Univ. Penn.....	June 19, 1912....	.....	S. W. Allen, Watertown.
South Dakota V. M. A.....	2d Tues. July '12	Los Angeles..	J. A. Dell, Los Angeles.
Southern Auxiliary of California	.....	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	.....	A. C. Topmiller, Murfreesboro
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	Fort Worth...	R. P. Marsteller, College Sta
Tennessee Vet. Med. Ass'n.....	.....	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Logan	A. J. Webb, Layton.
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	.....	G. T. Stevenson, Burlington.
Utah Vet. Med. Ass'n.....	Mar., 1912	514—9th St.,	C. H. H. Sweetapple, For.
Vermont Vet. Med. Ass'n .....	.....	N. W.....	Saskatchewan, Alta., Can.
Veterinary Ass'n of Alberta.....	.....	Winnipeg.....	M. Page Smith, Wash., D. C.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	Jersey City...	F. Torrance, Winnipeg.
Vet. Ass'n of Manitoba.....	Midsummer Fair	141 W. 54th St.	E. L. Loblein, New Brunswick.
Vet. Med. Ass'n of N. J.....	July 11, 1912....	Jersey City ...	R. S. MacKellar, N. Y. City
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	Newport News	A. F. Mount, Jersey City.
Veterinary Practitioners' Club....	Monthly	Pullman.....	Geo. C. Faville, Norfolk.
Virginia State V. M. Ass'n	July 11, 1912....	Wenatchee....	R. J. Donohue, Pullman.
Washington State Col. V. M. A..	1st & 3d Fri. Eve.	Pittsburgh....	Carl Cozier, Bellingham
Washington State V. M. A.....	Jan. 9-10, 1913...	Janesville....	Benjamin Gunner, Sewickley
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	York.....	J. P. West, Madison.
Wisconsin Soc. Vet. Grad	July, 1912.....	.....	E. S. Bausticker, York, Pa.
York Co. (Pa.) V. M. A.....	June 4, 1912....	.....	.....

PUBLISHERS' DEPARTMENT.

*Subscription price, \$3 per annum, invariably in advance; Canadian subscriptions, \$3.25; foreign countries, \$3.60; students while attending college, \$2; Students in Canada, \$2.25; single copies, 25 cents. **Copy for advertisements should be received by 10th of month.***

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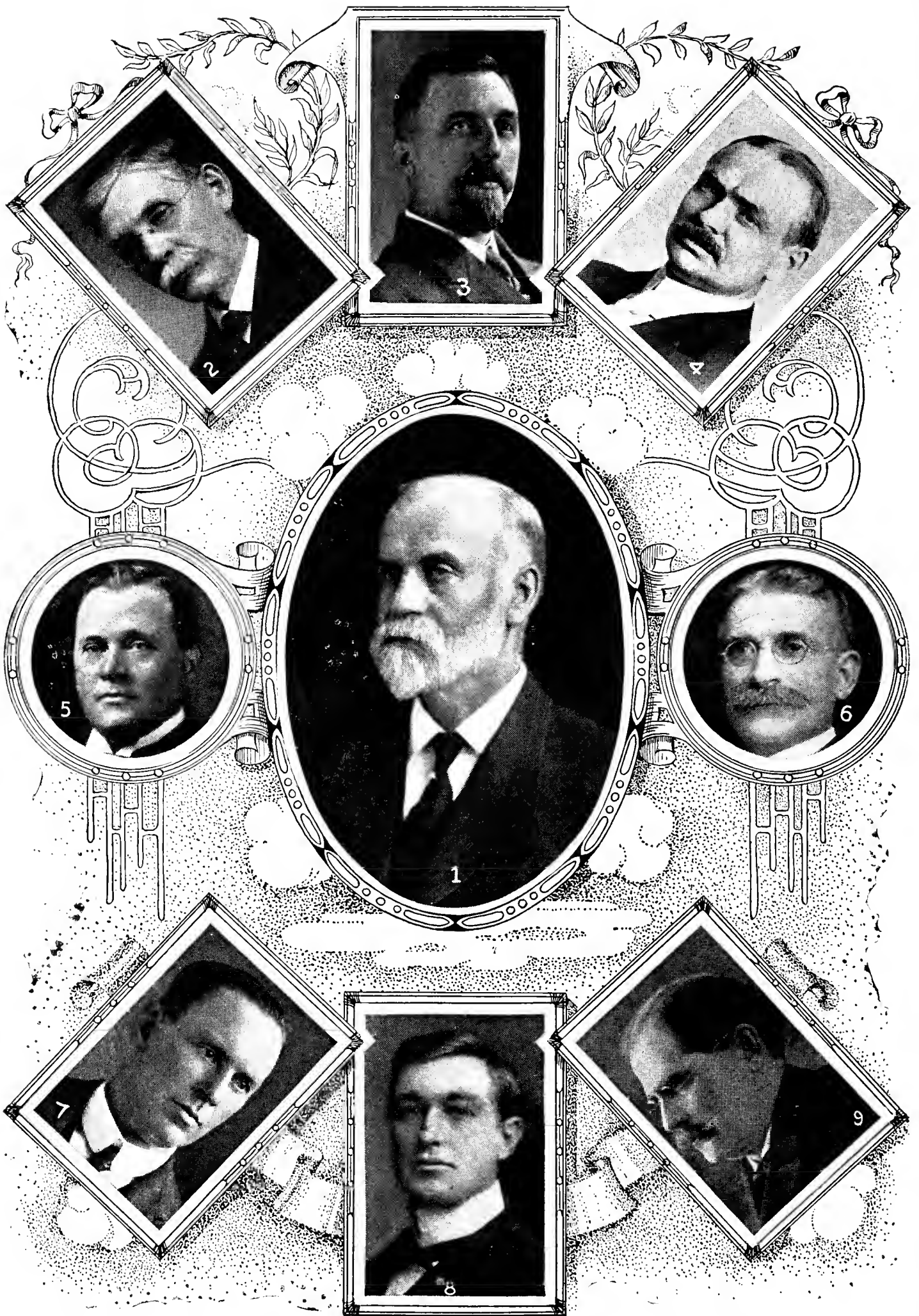
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THE CHICAGO MEDICAL BOOK COMPANY is bringing out some excellent up-to-date veterinary works, for which the veterinary profession are under obligations to them. See announcements on page 12 (adv. dept.), this issue.

MODERN VETERINARY MEDICINES OF MERIT are what all modern veterinarians require; and if they will look carefully into the list of specialties imported by C. Bischoff & Co., Inc., on page 9 (adv. dept.), present issue, they will find them both modern and meritorious.

BE PREPARED FOR THOSE SUMMER COUGHS by laying in a little stock of Glyco-Heroin (Smith). You know how persistent they are, and you know how efficacious this preparation is. It is also an excellent agent to break up the coughs of distemper in dogs.

THE PURELY VEGETABLE TONIC bearing the trade name of "*Red Ball Brand Stock Food*" is an excellent stomachic and digestive regulator as stated in the announcement of the manufacturers on page 28 (adv. dept.) of this issue. Write the Atkins and Durbrow people about it.



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AMERICAN VETERINARY REVIEW.

AUGUST, 1912.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, June 15, 1912.

GERM CARRIERS IN EPIDEMIOLOGY.—Generally speaking, it is believed that the individual affected with transmissible disease constitutes *alone*, as long as the affection lasts, a source of contagion, either directly or indirectly through the objects or media which he has soiled with its morbid products. On this principle our current measures of prophylaxy are based.

Such, Dr. Vaillard, general medical inspector of the Army, has written in the *Revue Scientifique* and he has added: To this traditional notice, another must now be added. Sound, healthy subjects, showing at least all the appearances of health, may hold back in them the virus of an infectious disease, spread it and propagate it unknown to all in the surroundings where they live. Every general system of defensive protection finds in this an unforeseen breach; whose importance must neither be overlooked nor exaggerated.

To those healthy subjects, able to propagate a disease of which they show none of the symptoms, the name of *germ carriers* is today given, a new word whose notion is rather old, as indeed it was already known that the microbe of pneumonia of man can persist for a long time in the mouth of subjects who have recovered and may sometimes remain as virulent for those who have never been affected with that disease. The same can

be said of the microbe or streptococcus of erysepela. And for diphtheria, Roux has demonstrated the frequent survie (?) of the specific bacillus in the mouth and nasal fossæ of convalescent children or of those that have recovered, and again the common presence of the same bacillus, virulent or not, in the throat of healthy children, examined in a healthy center and never having had diphtheria. All those germ carriers were already known, and yet the idea still prevailed generally that pathogenous microbes do not live beyond the disease that they give rise to, although it is not so. Scarlatina patients remain contagious for several weeks after the complete return of health. Typhoids recovered since months and more, may after this time have suppurative lesions due to the typhical bacillus. With malaria, is not very often its recovery only apparent and cannot for a long time its parasite remain asleep in some organ, principally the spleen, to suddenly return with a new infection from mosquitos?

The recent observations of the German school have widened the scope of our knowledge in that direction in showing the relative frequency in healthy subjects of the specific germ of typhoid fever, cerebro-spinal meningitis, cholera, dysenteric and acute poliomyelitis or the disease of Heine-Medin. Veterinary pathologists have also brought forward facts which affirm the interference of these healthy germ carriers in the transmission of some infectious diseases of animals.

These germ carriers do exist and from that a natural consequence prevails, a new and necessary direction in the prophylaxy with the complementary measures that these facts imply.

* * *

The question, continues Dr. Vaillard, may present itself: "How can one become a germ carrier?"

As, after all, the answer applies to animals as well as to human beings, let us look at it as one applicable to a point of view of comparative pathology, as certainly the conditions are alike for both man and beasts.

1. Most often, it is after an attack of an infectious disease, well known or overlooked on account of its abnormal and deceiving aspect, such as is commonly the case with typhoid fever.

The bacillus many times will remain after the clinical recovery from the disease. Many convalescents throw it off *temporarily* for weeks and months with their dejecta or their urine. They are only *temporary* carriers. But in other cases instead of months it is by years that the presence of the bacillus can be detected in an organism. And that may last 10, 15, 20 years. The individuals are *chronic carriers*.

2. Sometimes it is *before the apparent manifestation of the infection*, of which he will become the victim, that a healthy subject may become a germ carrier (*precocious carrier*) and that he contributes to the contagion of a disease which he does not have apparently.

Easy fact to explain, as the introduction of a pathogenous microbe in an organism does not immediately give rise to its morbid effects. An incubation is necessary. But yet, during this silent and varying length of time required for the eclosion of the disease itself, the microbe may still be thrown and give rise to spontaneous contagion. Diphtheria, typhoid fever, cerebro-spinal meningitis, dysentery, cholera, measles, scarlatina have too often been the way they developed.

3. In a third modality, it is no longer patients that have recovered from a previous attack or are in the incubative stage of the disease, but *individuals who have not presented and will not ulteriorly present any of the symptoms of the disease in question, yet throw round them the seeds, germs of the disease*. This fact may seem absurd; it is nevertheless bacteriologically demonstrated and of rational interpretation. These subjects have been *contagionnés* (contaminated), but were not open for the infection; they keep in themselves the pathogenous microbes, but do not become diseased; they are not invaded by them, and as consequence may communicate them to other subjects which, less prepared, become for them a suitable ground. Those subjects form the type of *carriers without germs*.

This is illustrated with cerebro-spinal meningitis. In subjects affected with this disease, the meningococcus is always found in the mucosities of the nose and pharynx. It is there indeed that, for a more or less long time, he develops and grows before he emigrates towards the nervous centers, where it gives rise to meningitis. Therefore, *before, during and even after* the development of the disease, the meningococcus exists in the nasal fossæ and the pharynx of the subject and can be thrown out and grafted upon those surrounding the sick. Talking, coughing, sneezing are the means by which the microbe is disseminated in the surrounding atmosphere with the minute invisible particles of saliva of the sick subject.

* * *

After the consideration of that question, how can one become germ carriers, Dr. Vaillard examines a few diseases on human medicine which deserve special attention relating to the subject, and then from human he passes to veterinary pathology.

The part played by germ carriers has been known in veterinary medicine for a long time, and the facts which have been found are superposable to those existing in human pathology.

First, then, are the *healthy carriers, healthy animals which are bearers of germs susceptible to contaminate their contageners*. For instance, the ovoid bacteria of hemorrhagic septicemia and the microbe of the swine salmonellosis have been observed in the first respiratory and digestive tracts of healthy swine. The existence of the bacillus of the Rouget in the amygdalæ and the intestines of sound pigs is an established fact. Hence is explained the sudden appearance of one of those diseases after the introduction in an establishment, of swine absolutely sound and which most ordinarily remain the *only one free* from disease during the epizooty.

Second: *The animals apparently and even clinically recovered, but yet contagious, (convalescent or cured carriers)*.—Subjects that have recovered from bovine piroplasmosis and spirillosis hide yet the virus for many months and remain contagious.

Typho-anhemia of horses so well studied by Vallée and Carré furnishes also a no less typical example. The animals which resist infection constitute a true reservoir of virus. One of the most active causes of the propagation of this disease is due to the importation of horses considered as cured of this affection.

According to Loeffler the same conditions are applicable to foot and mouth diseases, the part played by recovered animals, but yet virus-carriers, cannot be denied.

The third class is made also of the *carriers of latent lesions*. Such as the subjects affected with pleuro-pneumonia with suques-trum in the lungs, clinically not made out and also those suffering with glanders or tuberculosis, which without ever presenting the slightest symptom of infection, contaminate so many of those with which they come in contact.

What sanitary measure can be applied against the dangers resulting from the presence of these germ carriers? is a question which interests all sanitarians, but which will probably remain almost completely unanswered!

* * *

LAUGHING GAS IN VETERINARY PRACTICE.—This new method considered above for obtaining anesthesia in animals and principally the small ones, brings me to relate another which the *Semaine Vétérinaire* speaks of, in a recent number, viz.: the anesthesia of dogs with laughing gas, which is most interesting among the methods of anesthesia of short duration. Some isolated attempts to obtain that have been made with the chloride of ethyl and the best results have been obtained with those simple operations of daily occurrence in dogs, such as the extraction of a tooth, the enucleation of the eye, etc. It is, no doubt, a method which deserves the attention of every practitioner; it gives to the surgical interference an elegant method of operation which aids in the elimination of some of the old empiricism.

A veterinarian and a dentist in England have had the idea to try in the ^{first} dog, anesthesia with laughing gas. The trial was hazardous and uncertain; so much so that, as the *Semaine* says:

“Animals under the influence of protoxyde of nitrogen gas may live in it several hours, but the combustion which takes place in the organism is too active, and fatal organic alterations may result from it.”

The attempts that were made by Harling Capes and Lewis Green have shown that dogs, like men, are susceptible to the action of the peroxyde, but that with dogs, the great irritability and lively drunkenness observed in man, is not noticed with the dog. The anesthesia takes place rapidly, in one or two minutes, the muscular relaxation is complete and the sensibility sufficiently marked to allow without reaction, on the part of the animal, the extraction of a tooth or a simple operation of short duration.

Rapid in its action, the method can be easily resorted to, specially with the peculiar instrument invented by the English surgeons. The animals recover from the anesthesia in a few moments without difficulty. As for the dangers to run, they seem very little; it is necessary to have the animal inhale the gas for four or five minutes to succumb to it.

* * *

VIRULENCY AND CONTAGIOSITY OF PERSPIRATION IN TUBERCULOSIS.—This very important subject has been the object of a communication made before the Academy of Medicine of Paris relating the observations made by a Dr. Piery of Lyon. Called to care for numerous tuberculous people who, most all, lived with their children in poor quarters, often in only one room, he made two principal observations, one of which at least, is in positive opposition with general classical data: the absence of tuberculous contagion amongst children who were playing on the floor surrounded with the dust of sputa, carrying to their mouth culinary tools and other objects, soiled more or less with Koch's bacilli, and in fact being placed in almost ideal conditions of contamination. And again, by opposition, he observed the frequent contagion between husband and wife, also apparently exposed, but however being still able to take, instinctively or other reason,

prophylactic precautions ignored by the children. What was the cause? Recent researches which had been published on the scepticity of the perspiration of the hands and the sudoral effect upon surgical wounds by the surgeon's hands, Dr. Piery thought to investigate the possible virulency of the perspiration of tuberculous subjects, as being possibly the reason to explain the frequency of the conjugal infection.

From his investigations and experiments he was brought to very important conclusions, amongst which are: that the perspiration (pure and free from any extensive contamination) is virulent and contains the bacillus of tuberculosis. This virulency has been observed in 30 to 76 per cent. (say 4 out of 9 cases) amongst tuberculosis affected with surgical lesions, tuberculous rheumatisms, peritonitis, etc.; in other words, with positively closed or slowly developing lesions.

The perspiration may even oftener, say 41 to 66 per cent. of the cases, be the vehicle of the bacillus of Koch, and then an agent of contagion, either by direct contact or again by an indirect way, such as by soiled cloth.

This contagious power of the perspiration will impose important measures of disinfection which will have to be added to those already known.

The observation of this mode of contagion, new I may say, may not have in veterinary medicine the same importance that it offers in human medicine, and yet deserves our attention.

* * *

TINCTURE OF IODINE AND DIGESTIVE FUNCTIONS.—Since a short time tincture of iodine as a special therapeutic agent has been the subject of much writing in medical and veterinary periodicals. Without recalling again, its great antiseptic properties and the great service that it can render in surgery, whether when it is employed in local applications to disinfect the skin or again in the treatment of wounds of all kinds where it has proved itself one of the best preparations to stimulate the repairing process of tissues and hasten the work of cicatrization, it is evi-

dent that for the present as an external topic it occupies today a first place in external therapeutics.

But besides its numerous indications for external use there are others. When administered internally, it manifests some valuable properties, viz.: as tonic to the digestive apparatus which it regulates in its functions by stimulating the appetite. Of course one must not lose sight of the verdict which is laid against its use by therapists. Kaufman tells us that even given in small doses it is not supported easily. The appetite is soon lost, gastro-enteritis sets in, loss of flesh, etc. If it is given it must be with large quantities of mucilaginous or gummy fluids. At any rate its administration must not be of long duration, as manifestations of iodism are to be looked for. "Nevertheless its tonic digestive actions have already been described by a German professor, Dr. Kuss of Strasbourg, and it is to them that Mr. Mollereau called the attention of the Société Centrale in relating the success he obtained in a desperate case.

An animal had a sore neck from peculiar harnessing. It started on the superior border of the neck. Swelling, abscesses, diffused suppuration, necrosis of tissues, spreading of the infection, sloughing of skin and sub-cutaneous tissues leaving an enormous sore extending from the superior third of the shoulder to the lower part of the fore arm in length and from the anterior face of the chest to back of the elbow in width, was the history of the case. As can be surmised, the general condition of the animal was very bad and notwithstanding all the care, the nursing and the varieties of feedings which were offered to him, his appetite finally gave way entirely and fatal termination was in prospect. At that time the work of Dr. Kuss was thought of and tincture of iodine internally was prescribed by Mr. Mollereau. First 10 grammes were given every day and later raised to 20. Under its influence, the digestive functions gradually regained their normal condition and the appetite returned and rapidly improved—which was a great help in carrying on the treatment demanded by the ugly wound of the upper part of the leg.

It may be said that this is but one case. No—Mollereau has

resorted to tincture of iodine since in many instances, as an appetizer, and he has always obtained good results, principally during the convalescence of serious diseases, in animals which suffer from atony of the digestive apparatus, on those also which have had milk diet for a long time, and again in cases of rebellious loss of appetite with unknown cause and which refuse to yield to ordinary medical agents in use.

* * *

TWENTY-SEVENTH ANNUAL REPORT OF THE B. A. I. for the year 1910, published by the U. S. Department of Agriculture, Washington, D. C.

As is usual at about this time of the year, that annual publication has made its appearance, and the work done during the fiscal year by the officers of the Bureau is presented to the Government and to the public as ordered by law.

The volume this year does not differ from those that came before it, same form, same aspect, same printing, same prolific illustrations. The difference is in the contents; yet it is the same, always valuable, interesting and deserving careful and attentive reading to be appreciated.

The 27th report begins by that of the Chief of the Bureau, Dr. A. D. Melvin. It is a general review of all the work done by the various departments of this vast organization, viz.: "the meat inspection, the inspection of animals for export, that of the imported, the eradication of contagious and infectious diseases, their scientific investigations, those on the breeding and feeding of live stock and poultry and the work relating to the dairy industry." This enumeration is sufficient to show the importance of Dr. Melvin's report. The doctor has done ample justice to his task and in the many pages of said report one can at a glance realize that if he has good men under him to carry on the work, he is ever ready to make plain and show the great value of all the results that have been realized by the efforts of all his staff.

Following the report of the Chief a good number of papers

are printed, all of which present individually specific interest. Amongst them some draw principally the attention of veterinarians. The "Army Remount Problem," by George M. Rommel, will be closely studied by our army confrères; "State and Municipal Meat Inspection and Municipal Slaughter Houses," by Dr. A. D. Melvin, will interest the sanitarians; "Vaccination of Cattle Against Tuberculosis," by Drs. E. C. Schroeder, W. E. Cotton, John R. Mohler and Henry J. Washburn, will be read by all and much valuable information will be obtained, and the conclusion will be accepted by many, even if it reads in relation to the subject of the protective inoculation against tuberculosis that though "results have been obtained which are very encouraging to the investigator and which prompt him to strive onward with renewed vigor and hope, no system of bovo-vaccination has reached a stage at the present time that justifies its use in common practice." The *various methods for the diagnosis of glanders* is a communication from Dr. John R. Mohler and Adolph Eichhorn; the *regional lymph glands of food-producing animals*, of great interest to meat inspectors, is by John S. Buckley and Thomas Castor.

As I have said, these reports are to be read by the veterinarians, but they are not the only ones of importance in the 27th report. The "Principles of Breeding and the Origin of Domestic Breeds of Animals," by J. Cossar Ewart, M. D., F. R. S., of Edinburg; the "Ancestry of Domesticated Cattle," by E. W. Mohore, are both of superior interest to zoologists. "The Progress and Prospects of Tick Eradication," by Dr. Cooper Curtis; "The Use of Arsenical Dips in Tick Eradication," by Dr. B. H. Ransom and N. W. Graybill, with its handsome illustrations; and a few others with valuable consideration on their specific subjects, all of them co-operating to the completion of an excellent work which is ended by miscellaneous information concerning the live stock industry.

With its nearly 600 pages of easily-read printing, with 42 plates, of which few are colored, and with 75 text figures and its important and valuable contents, the 27th Annual Report will

no doubt make a good figure among the many similar reproductions of the Bureau of Animal Industry.

* * *

BIBLIOGRAPHIC ITEMS.—*Farmers' Bulletin* 480, from U. S. Department of Agriculture. "Practical Methods of Disinfecting Stables," by George W. Pope, D. V. S., of the Bureau of Animal Industry. Also *Bulletin* 145 on "Trypanosoma Americanum," a common blood parasite of American cattle, by Howard Crawley, of the Zoological Division, B. A. I. "Agricultural Journal of the Union of South Africa," with an article on contraction in the standing position, by J. J. Edgar, Government Veterinary officer. *Archives des Sciences Biologiques* of St. Petersburg, Vol. XVII., No. 1, are here thankfully acknowledged.

A. L.

GREAT A. V. M. A. MEETING AT INDIANAPOLIS— FORECAST BECOMES CRYSTALLIZED FACT.

In our "*Forecast of A. V. M. A. Meeting at Indianapolis*" in the May number of the AMERICAN VETERINARY REVIEW, we gave to our readers in brief an exact outline of the plans of the Indianapolis meeting, and our June number contained a few details, including hotel headquarters, capacity and conveniences of the meeting place, arrangement for clinics, etc. That forecast as then outlined has now well-nigh reached completion, through the untiring efforts of the local arrangements committee, consisting of leading representative veterinarians of twelve Indiana cities, under the able directorship of Chairman Roberts of the host city. This has been a tremendous task, owing to the immense gathering that is anticipated at this central-west city; but the personnel of the committee proves it equal not only to the task of arranging, but of carrying to a successful finish, its most excellent plans. Following is a roster, by glancing at which the character of the work for each day of the convention week may be readily grasped; details, such as names of essayists and subjects of es-

says, were not yet compiled at the date of this writing (July 15), but will be embodied in the official programme, copies of which Secretary Marshall will have in the hands of all members of the association at least a fortnight before the date of the opening of the convention.

	Monday, Aug. 26.	Tuesday, Aug. 27.	Wednesday, Aug. 28.	Thursday, Aug. 29.	Friday, Aug. 30.	Saturday, Aug. 31.
9 to 12 A.M.	Association of Faculties and Examining Boards Claypool Hotel	General Session Auditorium German House	Section Work German House	Section Work German House	Section Work German House	Clinics Indiana Veterinary College
12 to 2 P.M.	Intermission	Intermission	Intermission	Intermission	Intermission	Intermission
2 to 5 P.M.	Association of Faculties and Examining Boards Claypool Hotel	Section Work German House	General Session Auditorium German House	General Session Auditorium German House	General Session Auditorium German House	Clinics Continued
8 to 11 P.M.	Dr. D. E. Salmon Illustrated Lecture Uruguay Claypool Hotel Auditorium	Reception Claypool Hotel General Session Auditorium German House	General Session 8-9.30 Auditorium German House Vaudeville Smoker Gents German House, 9.30-11.00	Annual Banquet German House	General Session Auditorium German House	

A programme of the entertainment arranged for the convenience of guests as well as for their entertainment and amusement while in Indianapolis, is being prepared under the directorship of Chairman W. B. Craig of the entertainment division, a copy of which will be provided each member at the time of registration. All members should arrange to reach Indianapolis on Monday the 26th, as on that evening, as the roster indicates, Dr. D. E. Salmon, former Chief of the Bureau of Animal Industry, at Washington, D. C., and now Director of the Veterinary School, at Montevideo, Uruguay, will deliver his beautifully illustrated stereopticon lecture on Uruguay. President Brenton will open the first session of the forty-ninth annual meeting of the Ameri-

can Veterinary Medical Association at 10.30 a. m., Tuesday, August 27, in the auditorium of Das Deutsch Haus, corner of Michigan and New Jersey streets.

Following the same general plan as last year, the sections will be presided over by the vice-presidents. First Vice-President Moore will preside over the section on "Practice" in Room A, under the direction of Dr. H. D. Gill, New York; Second Vice-President Van Es will preside over the section on "Surgery" in Room B, under the direction of Dr. W. L. Williams, Ithaca, N. Y.; Third Vice-President Jensen will preside over the section on "Sanitary Science and Police," under the direction of Dr. Charles H. Higgins, Ottawa, Canada, in Room C. By looking carefully at the roster for a few minutes you will see that the general plan is, section work in the morning and general session in the afternoon and evening, with but two exceptions. The exceptions are, that on the opening day (Tuesday, August 27) the section work is done in the afternoon, the opening exercises constituting a general session occupying the forenoon; and on Thursday, August 29, the evening general session is replaced by a banquet. We wish to call especial attention to one more thing that the roster will tell you, because of its very great importance, and will then leave you to peruse it at your leisure, and that is the very first notice it contains, away up in the left-hand corner—meeting of "Association of Faculties and Examining Boards, at the Claypool Hotel, Monday, August 26, 9 to 12 a. m." Dr. S. Stewart will preside over this important session; which should be, and no doubt is, of vital interest to a very large percentage of the membership. So far the local committee have taken care of you, but there is at least one thing you have got to do for yourselves, after the committee have furnished a list of the hotels, and that is arrange for your accommodations while in Indianapolis. And in this Chairman Roberts urges prompt action. Our advice is *write immediately* upon receiving this list requesting that reservations be made for you in some one of the following hotels, which are named in order of preference according to desirability of location:

HOTELS AND THEIR RATES.

No. 1, CLAYPOOL (Official Headquarters): Corner Illinois and Washington streets. Can accommodate 500 or 600 visitors. Without bath, \$1.50 to \$2.00; with bath, \$2.50, \$3.00 and \$3.50.

No. 2, DENISON: Pennsylvania and Ohio streets. European plan. Double without bath, \$1.00 and \$1.50; single without bath, \$1.50 and \$2.00; double with bath, \$2.00; single with bath, \$2.50, \$3.00 and \$3.50. American plan: Without bath, \$2.50 to \$4.00; with bath, \$3.50 to \$5.00.

No. 3, EDWARD: 126 S. Illinois street, 150 rooms. Without bath, 1.00; with bath, \$2.00 and \$2.50.

No. 4, ENGLISH: Northwest corner Monument place; 50 rooms, double, without bath, \$1.00; 100 rooms, double without bath, \$1.50; 75 rooms, double with bath, \$2.00.

No. 5, KINGSTON: 31-35 Monument place. European plan. Single, 75 cents to \$1.50; double, 50 cents to \$1.00.

No. 6, GRAND: Corner Maryland and Illinois streets. European plan. Without bath, \$1.00 to \$1.50. Extra for bath, 50 cents to \$1.00.

No. 7, COLONIAL: New York and Illinois streets; 100 rooms. European plan. Single, \$1.00, \$1.50 and \$2.00. The \$1.50 and \$2.00 rooms with bath. Double, 75 cents to \$2.00. Cafe in connection.

No. 8, ALBERT: 126 E. Ohio street; 50 rooms. Single without bath, \$1.00; double without bath, \$1.50; single with bath, \$2.00; double with bath, \$2.50.

No. 9, MAJESTIC: 138 S. Illinois street; 40 rooms; 75 cents to \$1.50. Free shower bath and tub bath on each floor. Eight rooms with private bath.

No. 10, STUBBINS: 153 S. Illinois street; 70 rooms. Without bath, 50 cents to \$1.50; with bath, \$1.50.

No. 11, ONEIDA: 216 S. Illinois street; 150 rooms. European, 75 cents to \$2.00.

No. 12, SPENCER HOUSE: Illinois and Louisiana streets. European plan, \$1.00 and \$1.50; American plan, \$2.50 and \$3.00.

No. 13, IMPERIAL: Corner Capitol avenue and Ohio street; 225 rooms. Double, 50 cents; single, 75 cents. With private bath, \$1.50 and up.

No. 14, LINDEN: 311 N. Illinois street. Will have 100 beds at the disposal of visitors.

Write for your reservations immediately upon receipt of this list, then go ahead with the plans at home for getting away and attending a greater meeting of the AMERICAN VETERINARY MEDICAL ASSOCIATION than history has yet recorded. On to Indianapolis!

SPECIAL CARS FROM NEW YORK TO INDIANAPOLIS.

The added pleasure of journeying to a convention city surrounded by your dearest friends, needs no argument on our part to impress it upon those who have traveled that way. We therefore take great pleasure in announcing to our readers in the New England states, in New Jersey and in New York, that arrangements have been completed with the New York Central Lines to furnish special sleeping cars from New York to Indianapolis, whereby they may travel in all the luxury and comfort that that road knows so well how to provide. It is proposed to leave New York (Grand Central Terminal) Sunday, August 25, 12.40 noon, stopping at One Hundred and Twenty-fifth street 12.51 p. m., Albany 4 p. m., Utica 6.08 p. m., Syracuse 7.27 p. m., arriving at Indianapolis 9.10 a. m. Monday, August 26. A party of ten or more persons will secure a special rate of \$16.25 from New York City, with proportionately low fares from up-state points. The regular fare from New York is \$18.50. The cost of a lower berth from New York is \$5; upper berth, \$4; compartment (accommodating two persons), \$14; drawing room (accommodating two or three persons), \$18.

There is no reason why enough persons cannot signify their intentions early enough to have a special car, or two or more special cars, and enjoy the privacy that goes with that kind of travel.

And if the arrangements proposed do not *entirely* meet the views of all, we are sure that Dr. De Vine, who as resident state secretary has consented to act as chairman of the transportation committee from this point, will have no objection to changes being made in the arrangements to make them conform to the wishes of the majority. Applications for reservations and further information should be addressed to Mr. W. V. Lifsey, General Eastern Passenger Agent, New York Central Lines, 1216 Broadway, New York City. Write Mr. Lifsey at once, and get posted on what you want to know, talk it over with your friends, and then make your reservations as early as possible.

BREEDING QUESTIONS.

Since offering the REVIEW pages for the discussion of breeding problems by the veterinary profession, and expressing our opinion as to the importance of the subject, and our belief that it belonged to the domain of the veterinarian and should of necessity be a part of veterinary education, we have received congratulations and commendation from all over the country, and declarations from some of the leading and progressive members of the profession, of their intention of discussing these problems with their brothers in the veterinary profession, through the medium of the AMERICAN VETERINARY REVIEW. If these declarations become accomplished facts, it will mean that an immense fund of knowledge that is now stored up and inactive will spring into activity, flow from the pens of its possessors and become printed facts that may be read by thousands of the *confreres* of the writer. Each article written will, in addition to imparting valuable knowledge *per se*, stimulate others to read, think and write on the subject, with the result of broadening and increasing the general knowledge of breeding beyond all calculation, a knowledge which cannot fail to attract the attention of the stockman, who, though a practical breeder, has not had the advantages of the scientific training of the veterinarian, versed in the anatomy, physiology, etc., of the reproductive organs, complemented by a

diligent study of the laws of propagation. Recognition by the stockman of the actual possession of knowledge by the veterinarian, superior to his own on matters of breeding, is the only thing that actuates him to seek his counsel, not the mere fact that the veterinarian possesses a degree in veterinary medicine. We have not proceeded quite that far yet in this country, but are working diligently to bring that about. The REVIEW believes that the American veterinarian, through the broadened curriculae of our veterinary schools in the last decade, is much better posted on breeding problems than is generally known; and that in discussing breeding questions together, they will not only receive the benefits already cited as resulting from such discussion, but will attract the attention of the agricultural journals to their interest in and knowledge of such matters, and that it will only be a matter of a few years when a degree in veterinary medicine will inspire in the stockman the same confidence in the qualification of its possessor to advise him how to breed good stock, that he now has in his ability to prescribe for his sick ones; and not until that comes about will the veterinarian have come into his own and have reached his full measure of usefulness in his community.

In our present number Veterinarian Olaf Schwarzkopf, Third Cavalry, U. S. Army, discusses *Breeding Problems and the Army*, in which the doctor reviews the conditions that have led up to the present dearth of army remounts, and opens up a field for discussion on a very important branch of horse breeding. We also quote from a letter just received from a retired veterinarian and extensive breeder of draught horses for thirty years, well known on both sides of the Atlantic, which will furnish food for thought on an entirely different branch of horse breeding. He says, in speaking of the Clydesdales: "To my thinking they have deteriorated of late years, by *in and in breeding*, by selection of males and females with *too light bone*, and by breeding from mares and stallions with markedly *too much white on faces and legs*, and many almost pinta." In another part of his letter he says: "I have been breeding Clydesdales for about thirty years

on a large scale; at one time from 350 selected mares, and found no difficulty about color by careful avoidance of white in excess, nor with bone and stamina by careful selection." In another part of his letter he says: "My agent in Scotland and others complain of the difficulty, yearly increasing, of being able to buy just what I want. I can realize the truth of this by noticing the awards at shows to Clydes with white faces, legs white to the body and splotches of white on sides and thighs. The old saying that 'a good horse is never of a bad color,' may be true in many cases, but I cannot believe that he would not be as good if he was of a good color. I know he is more attractive, should be more salable and bring more money." Continuing, he says: "Another result of *in and in* breeding is that the males are less sure in foal getting, and whether due to the stallions or the mares, foals die more frequently from one ailment or another between birth and weaning time. Few stallions nowadays successfully impregnate more than 50 per cent. of the mares they serve. The result is much loss and disappointment to the owners of mares, and loss of income to the stallion owner. Most deterioration and arrest of improvement, however, arises from ignorance or penuriousness of the average mare owner, who will, in spite of every advice, breed to cheap stallions, ignoring entirely the common laws of successful mating. Such men also fail to realize the importance of liberal feeding of the foal for the first three years of its life." We have taken the liberty of quoting from this gentleman's letter that our readers might have the benefit of the opinions expressed in it at this time, and hope at some future time to have an article from him, at which time his name will be published. The subject of incestuous breeding is certainly an interesting one, and an important one, since its use to a greater or less extent is essential in improving and fixing type. It seems to have been used successfully by Robert Bakewell, of England, the celebrated improver of Leicestershire sheep and Longhorn cattle in the eighteenth century. And from experiments made by Schroeder on guinea pigs some years ago, he demonstrated that, with that animal at least, if you selected absolutely physically perfect in-

dividuals to begin with, no deterioration would result from in and in breeding. It was our good fortune to see the very large number of extraordinarily fine specimens of guinea pigs that Dr. Schroeder had produced from one male and one female in the beginning. Perhaps some one will discuss "in and in" breeding in a future issue, and some one else will explain why the breeders of Clydesdales in Scotland run into white to excess and smallness of bone, when our correspondent on this side of the Atlantic is able to avoid it by careful selection. Do, perhaps, the Scotch breeders fancy that coloring, and in encouraging it, sacrifice what is more important; or is it the result of environment?

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ORIGINAL ARTICLES.

AUTOTHERAPY.*

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Healthy tissues either resist disease, or develop or tend to develop resistance to disease. This is the fundamental principle of health and, consequently, of life.

Reaction to disease is brought about by the action of toxic substances (developed during the course of the disease) on healthy tissues. This is called specific reaction.

Specific reaction is due to the action of specific anti-bodies. Approximate reaction may be developed in the tissues by the action of the products of heterologous micro-organisms on healthy tissues, and also by the action of autogenous micro-organisms (which have undergone a change, as in sterilization by heat, or from being grown in culture media outside of the body tissues, etc.) on healthy tissues. The heterologous micro-organisms and autogenous micro-organisms last referred to are vaccines of lowered therapeutic value.

Specific antibodies are developed in healthy tissues by auto-inoculation, or direct inoculation, which is practically the same thing, that is, by the introduction of the toxic substances developed during the course of the disease in healthy tissues. The process tends to bring about a natural cure.

A natural cure is brought about either by auto-inoculation or direct inoculation.

"Auto-inoculation may be assisted by hyperemia, as heat in fomentations; massage, as in friction; Biers' hyperemic treatment; stimulating lotions locally applied, etc."

* From *Lancet Clinic*, Nov. 4, 1911. Read before the Veterinary Medical Association of New York City, June 5, 1912.

We may assist in bringing about a natural cure, or, in other words, specific antibodies may be developed, by direct inoculation or by placing the autogenous toxic substances, developed during the course of the disease, directly into healthy tissues. This is the auto-therapeutic method of cure. The nascent toxic substances developed during the course of the disease are the substances nature uses in auto-inoculation and also the substances used in auto-therapy. These nascent toxic substances are most potent and curative. Auto-therapy is the therapy that employs all of the autogenous nascent, toxic substances developed during the course of the disease against which the healthy tissues react in a curative manner. The reaction against these toxic substances is the reaction against the disease.

When any of the toxic substances developed during the course of the disease, as the bacterial toxic substance for example, has been changed (as by heat or when grown in culture media outside of the body tissues, or by time) its therapeutic value is lessened in proportion to the change that takes place in it by the various processes which it undergoes.

Sir Almroth E. Wright likens disease to weeds in a garden, and the vaccine to the gardener. At times, the gardener has to weed the garden often before the weeds are all exterminated or destroyed. If a single root is left it may spring up and send out roots, and the gardener will have to go over and re-weed it again.

Restoring normal conditions to the patient always has been and always will be the most important consideration. The patient seldom will refuse to take anything, he can be made to understand will cure him.

The opsonic index is liable to be misleading; the majority of authorities are now guided by the clinical symptoms of the patient as to the time when it is necessary to re-vaccinate. The clinical symptoms are a safe guide as to the time when it is necessary to directly inoculate or to re-auto-inoculate. Each toxic substance acts on the tissues of the body, in a manner peculiar to itself. Its action is different from that of any other toxic substance. To understand the action of the toxic substance of a disease, the disease will have to be studied with this end in view.

But when we find the toxic substances of many diseases act in a curative manner when placed in certain tissues we are tempted to formulate rules for their action and classify them accordingly. It is profitable as a working basis to start in endeavoring to discover how many act in a similar manner and wherein their actions differ.

Rule I. *In extra-alimentary and extra-pulmonary diseases if the toxic product of the disease is placed in the mouth it will tend to develop specific antibodies.* The live pathological micro-organisms may be employed in many diseases.

Rule II. *In intra-alimentary and intra-pulmonary diseases if the toxic product of the disease be placed in healthy tissues outside of these systems, it will tend to develop specific antibodies.* Upon this common ground all schools of medicine can meet. It must be remembered that it is healthy tissues anywhere that develop specific antibodies; it appears, therefore, evident in intra-alimentary and intra-pulmonary diseases that the toxic substances developed during the course of the disease are already pouring into the alimentary canal in massive doses, and if considerable quantities of the crude vaccine and the other toxic substances of tissue change in addition were placed in the canal, it would be not only unbeneficial but harmful.

First, before we can auto-inoculate, we must obtain the toxic substances of the disease; this should be done by every known method. All the excretions and secretions of the body should be investigated with this object in view. For nature tends to throw off or get rid of the toxic substances out of the body. Failing in this, nature often auto-inoculates or allows them to escape into healthy tissues and cures the disease. Each disease should be studied by itself to discover, if possible, which route they take in their elimination, for the purpose of obtaining them for re-auto-inoculating or auto-therapeutic purposes. It is desirable to re-auto-inoculate in many diseases, just how many, clinical experience and careful laboratory investigations alone will tell. The range of application of this principle is very wide and includes the vast majority of infectious diseases.

The writer is developing a new method of obtaining the auto-genous micro-organisms in toxic disease where it appears now well nigh impossible to obtain them.

Vaccination as a prophylactic for disease is seldom or never practiced till the disease breaks out somewhere in or near the community, or we know pretty well from where it is coming. Now by vaccinating the patient from this advancing particular epidemic strain of bacteria, we are much more certain to prevent an infection than when we vaccinate from a remote and distantly related strain. We must individualize the disease as nearly as possible if we would obtain the best results, both for prophylactic and curative purposes. Swan claims, I believe, to have immunized other members of a family to scarlet fever by giving them the triturated scales taken from the infected member of the family.

Lux immunized whole flocks of sheep for anthrax by giving each the diluted product of a sheep in the flock that had come down with the disease. He failed to cure other sheep in other flocks with this stock preparation. Had he used the virus of an infected sheep from the second flock for immunizing, and curing each sheep of the second flock with his own virus, his results would have been more successful.

The writer is developing a means of curing sepsis by placing in the mouth the fresh autogenous toxic substances developed during the course of the disease. The therapeutic value of autogenous pus, given in this manner, is greater than the autogenous vaccine prepared from a pure culture of the offending micro-organism by the method now in vogue.

Pus contains all of the toxic products of tissue changes as enzymes, ferments, chemical changes in protoplasmic molecule, etc., against which the tissues rest in a curative manner. It also usually contains the toxic substances derived from the causative bacteria. The toxic contents of pus are the substances that cause a curative reaction in the tissue or a natural cure, when a natural cure is brought about. Nature uses all the contents of pus in auto-inoculation, or in curing the disease, all the contents of pus is what

the writer uses in curing sepsis. Auto-inoculation is auto-therapy. Pus contained, in many instances were examined, the staphylococcus streptococcus and colon bacillus.

There are many diseases that are caused directly by these micro-organisms and many diseases that are complicated by them. When we can obtain these causative micro-organisms in extra-alimentary and extra-pulmonary diseases, we will tend to cure the diseases caused by them (and tend to relieve diseases complicated by them) by placing these live micro-organisms in the mouth. We will discuss some of the extra-alimentary and extra-pulmonary diseases, or diseases caused by these bacteria and, that therefore tend to be cured by placing the toxic product of these three micro-organisms in the mouth (the staphylococcus, streptococcus and colon bacillus).

I. INFECTED WOUNDS.—The writer has cured hundreds of cases of sepsis, and many of the most pronounced cases of sepsis it is the lot of the surgeon to meet, by giving the patient pus from his wound by the mouth. The most remarkable cures he has ever seen have been in curing septic conditions by this method, by giving the patient a drop or two of pus every hour for three hours. The opsonic index was raised when tried in a number of cases.

A weak solution should be given to correct a bad or prolonged negative phase or aggravation in all cases of sepsis. The writer has used the 12th C. successfully. The discharge from a fresh wound placed in the mouth, will tend to abort sepsis. If the wound is clean, it will do no harm. (See also under hydrophobia).

The following is a case of aborted sepsis and is but one of many experiments that could be cited where this was done.

Henry R., 45 years, applied for treatment, January 20, 1911, at the clinic of the Volunteer Hospital. In falling he ran a splinter of wood from a rotten board in the back of his right wrist. It was an inch long and from 1-8 to 3-16 of an inch thick,—half the thickness of a lead pencil. It was decided to perform an experiment in this instance and the writer asked two of the internes, Dr. Dietrich and Dr. Kirsch, to witness it. In this ex-

periment practically every known rule of modern aseptic surgery was violated and the best results followed. Nothing was cleansed or sterilized. The instruments used were a scalpel, an artery clip and a pair of tissue forceps. These were taken from a pocket case of one of the assistants and used as they were. The wound was opened with the scalpel, after a futile effort to withdraw the splinter with the artery clip and forceps. It was taken away in small pieces. Time consumed, about ten minutes.

First, the wound was not washed or made sterile. Second, the surgeon's hands were not sterile. Third, the three instruments were not sterile. Fourth, the suture and the needle were not sterile. Fifth, the gauze covering the wound was not sterile. Sixth, the wound was placed in the unsterile mouth.

After the sliver was removed, the patient was told to suck the wound vigorously for ten minutes. Then a very superficial suture of silkworm gut was put in place, but the skin flaps were not drawn tightly. A flap of unsterile gauze was placed over the wound and held with a piece of tape. The tape was tied in a bow knot and the patient was instructed to loosen it and suck the wound every few minutes, especially when he felt any tickling or irritation in it. He was told to return to the hospital at any time if it gave him trouble, but to return at any rate in six days to have the suture removed. He did not return for two weeks and an orderly was sent to look him up. He stated the reason he had not returned was, "there was no necessity for returning; that the wound healed all right." He was told to return and have the suture removed. He said, "that's all right, I took that out with my jack-knife."

The writer does not recommend the auto-septic treatment of wounds to the exclusion of aseptic methods. Asepsis is ideal and should be universally employed where possible, but auto-sepsis offers an additional safeguard that may be used if the surgeon deems it necessary. Placing the discharge of the clean wound in the mouth will do no harm.

The curative effect in sucking the wound is two-fold.

Besides getting the endotoxine of the parent bacteria in the

mouth early, and thereby raising the power of the serum early and increasing the activity of the leucocytes, additional blood is brought to the parts or a hyperemia is established by the act of sucking the wound; the additional healing plasma brought to the parts would in itself be sufficient to cure a mild invasion. The dog, in licking and curing his wounds, does not establish a hyperemia. The soft, velvety tongue cleanses the wound, but by this very act he gives himself a dose of autogenous vaccine. If the dog sustain a punctured wound and it should go on to infection, he will not be able to get the discharge in his mouth till it comes to the surface; then when he licks it, it will go on to healing, for he then gets in his mouth all of the toxic substances developed during the course of the infection, against which the tissues react in a curative manner.

2. ACNE VULGARIS.—Is readily amenable to this treatment. The writer has a record of ten cases of chronic acne vulgaris having been cured by placing the discharge from the lesion in the mouth. Remember the dilution for aggravations.

3. Many forms of skin lesions, and their corresponding internal trouble.

4. Many forms of local skin lesions or diseases:

5. Boils, readily cured.

6. Abscesses, readily cured.

7. Adenitis, when due to many forms of bacteria.

8. Septicemia. The writer has a record of a case of puerperal septicemia that appeared to be cured by placing the patient's own milk in her mouth. Of course, the same element of doubt that always enters into any single case must enter here. Clinical experience alone will determine whether this was a "coincidence of time or a sequence of events."

The vaginal discharge would tend to be more curative, for by giving this we would be more liable to obtain the toxic product of the disease, for this is the route by which nature tends to eliminate the toxic products from the system. At the writer's suggestion, Dr. Freeman cured a case of puerperal septicemia by placing a weak dilution of the lochia in the mouth. The writer

recommends this therapeutic proceeding highly. He has seen good results follow giving pathological discharges from the vagina by the mouth, 3x dilution q. 2. h. for six doses in septic abortion. The auto-therapeutic, (or the AUTOPATHIC) treatment or safeguard in abortions would be to give the patient dilutions from her napkin by the mouth every time it was changed from the very beginning 3x. q. 2. making a fresh supply from each napkin. (See case of aborted sepsis in another paragraph.) Wright, in the Proceedings of the Royal Society of Medicine, gives a case of puerperal septicemia that was complicated with acute nephritis, with blood in the urine. "The vaccine was obtained from the vaginal discharge. It was found to be staphylococcus aureus, and coli organisms. The response was immediate, for the temperature in a few days became normal and she made an uninterrupted recovery." It is only going one step farther, to place a part of the menstrual discharge in the mouth to cure some forms of pelvic disorders.

9. BURNS.—Severe and deep burns may be cleaned from pus by placing the autogenous pus in the mouth.

10. X-RAY DERMATITIS.—Sir Almroth E. Wright says in the Proceedings of the Royal Society: "It may, perhaps, seem to you that only a man who is riding a hobby to death would suggest that a bacterial factor entered into the pathology of X-ray dermatitis. I will confess that it had never occurred to me that this might be the case till I was asked to see an X-ray operator whose hands were in a terrible condition with cracks and ulcers. Cultures here disclosed the fact that we had to deal with an extensive streptococcus infection, and the patient received great benefit from vaccine therapy, the intractable ulcers rapidly healing up. I asked myself, in view of the burning quality of the pain in X-ray dermatitis and of the course that the disease runs: whether a streptococcus might often be an important factor in this complaint."

11. "URINARY CALCULUS.—Dr. Wright says: It is now perfectly well understood that the formation of biliary calculi stands in connection with a coli infection of the biliary ducts and the

gall bladder, and it has been known for very many years that phosphatic calculi form in the urine as the result of changes produced by bacteria. It is only going one single step further to search for a bacterial cause in every case of urinary calculus and to try to identify the bacterial cause, if such should exist. I have not undertaken any systematic observation along these lines, but again, in the course of our daily routine work a certain number of facts, which all point in one direction, have thrust themselves on my attention."

12. "BACTERIURIA.—A medical man who had suffered for years from a bacteriuria, which furnished in every case a pure culture of staphylococcus, developed a real calculus and was operated on. (The question arises, had the staphylococcus been discovered early in his urine"—and given by the mouth, "whether the operation could have been avoided).

Dr. Wright gives three other cases of renal calculus where cultures from the catheter developed staphylococcus. Dr. Wright says:

13. "PRURITUS ANI is again one of those disorders which the ordinary man would not think of referring to bacterial infection. At any rate, it had not occurred to me that it might be due to such an infection till a patient who was suffering from this condition was referred to me for treatment, of an associated furunculosis. I now find it difficult to understand how it is possible to look at pruritus ani from any other point of view than that of a bacterial infection. I have had, in observation and treatment, in addition to the case just referred to, three other desperate cases of this infection. In each case I have found that a platinum loop applied to the seat of irritation brought away quite astonishing numbers of microbes invariably staphylococcus, pseudo-diphtheria and occasionally tetragenus, and in each of these cases life has been rendered comfortable, or at any rate quite tolerable by the use of proper vaccines."

The disease that can be relieved by placing the above named micro-organisms in the mouth are those diseases which are complicated by them, as cancer, and some cases of eczema, etc., etc.

It is believed by many that the pain incident to cancer is caused by the action of pus-producing micro-organisms, and we know when these micro-organisms are given by the mouth, in extra-alimentary and extra-pulmonary disease, specific antibodies are developed to them.

Dr. Wright says:

14. "DIABETES.—It must over and over again have suggested itself that diseases which are due to the faulty functioning of some organ, such as Graves' disease and pancreatic diabetes, may ultimately be traced to bacterial infection. Countenance is given to this suggestion by such work as has recently been done in connection with vaccine therapy and diabetes. I may refer to a case of pancreatic diabetes which was treated by my colleague, Captain S. R. Douglas, where the secretion of sugar and the symptoms of the patient were found to vary with the patient's resistance to a coliform bacillus which had been isolated in her feces. I may refer also to the interesting facts which Dr. McWatters is bringing forward in this discussion, in connection with the treatment of glycosuria by staphylococcus vaccine. I think you will see that this fact suggested that glycosuria and carbuncles, which we have always supposed to be related as cause and effect, may, perhaps, in some cases be merely two different manifestations of a staphylococcus infection."

There are many other extra-alimentary and extra-pulmonary diseases that are complicated with the streptococcus and staphylococcus and colon bacillus, but time and space forbid my going further into this discussion. The application of the principal is apparent.

The opinion is fast gaining ground that practically all diseases will eventually be proved to be of bacterial origin, for certain it is the number of diseases not known to be of bacterial origin is lessening gradually as new light is thrown upon them by the many investigators.

There never was a cure of a severe disease without a reaction in the tissues setting in. Reaction is the antithesis to action. A

curative reaction is against the action of toxic substances developed during the course of the disease. *The toxic complex.*

Remember it is the healthy tissues that react to toxic substances. When the poisons of a disease are placed in healthy tissues, the tissues tend to resist the action of the poison, they react it. This reaction is the reaction to the disease.

Healthy tissues are usually able to resist an invasion of pathological micro-organisms, but a lowered vitality coupled with exhaustion or fatigue, lack of proper nourishment, etc., are etiological factors that are recognized as predisposing to a successful invasion of pathological bacteria. Especially are pathological micro-organisms likely to find lodgment in the tissues under these conditions, if there is a point of least resistance in the body. Weak lungs are predisposed to pulmonary infections, etc. The locus minoris resistentiæ, or point of least resistance, about which so much has been recently written, is pretty well understood. The experiments of Baumgarten are well known. He crushed the testicle of healthy rabbits and then injected tubercular bacilli in the jugular vein. The tubercular bacilli were invariable demonstrated in the testicles. It was the point of least resistance and the bacteria were attracted to it.

Rheumatism is a disease of more or less obscure etiology; this has been cured or relieved by heterologous vaccines of some of these three micro-organisms and by reverse reasoning, we might assume that these micro-organisms play a large part in the disease; especially do these micro-organisms appear to be an etiological factor in rheumatism, since "several investigators have found them in the blood of rheumatic patients." (Dr. Ewing, Pathologist, Cornell University Medical College.)

If we could obtain these micro-organisms and give them by the mouth we should tend to cure or relieve the patient. In rheumatic patients, as in some forms of diabetes, etc., and other toxic diseases, let us examine our cases carefully over the whole body for skin lesions or an "external manifestation of the internal trouble," for auto-inoculation purposes. We may in this way cure many diseases, for the skin is a sewer of the body. One of its principal functions is elimination.

When the bacteria are in the blood stream, (as it is claimed bacteria to have been found there in rheumatism,) they develop few antibodies, but when injected hypodermically, they develop more antibodies. Injecting animals with vaccine in the laboratory to increase the power of the serum in developing anti-toxins clearly proves this.

Let us take some localized toxic disease as appendicitis in the interim, or possibly rheumatism. To obtain the fully identified vaccine to abort or cure this disease, we might first reduce the vitality, if advisable, or lower the resistance to disease in any way the physician may deem advisable—the patient's condition would be the best guide as to what method to employ if it is necessary to employ any, for the vitality of the patient may be already lowered. Then make an artificial point of least resistance to which abundant experiments have proven some bacteria will come, we now have a means of obtaining the causative identified bacteria for the purposes of auto-inoculation. The point of least resistance may be made by means of a burn or possibly a blister. The bacteria at this time are temporarily more active on account of the lowered vitality of the patient. The necrotic tissue of a burn will tend to attract the bacteria from their hiding place to it and we shall be able to cure the patient now, for we have the causative micro-organisms, for re-auto-inoculation purposes.

Making an artificial point of least resistance alone may be sufficient in many infectious diseases, in some it may not be applicable. The burn need not be extensive, but it is desirable that it go well through the skin and wide enough to drain. Many authorities believe many forms of nervous diseases, and some forms of insanity are due to toxic substances, and possibly due to bacteria.

It may appear wise, at times, to establish an artificial point of least resistance for an autogenous vaccine, to build up the power of the patient's serum before the operation, as a prophylactic to sepsis. An artificial point of least resistance, from a therapeutic point of view, or to obtain an autogenous vaccine, has never been attempted; and yet there is absolutely no reason why

it should not be done and every reason for so doing. Many authorities whom the writer consulted, believe we should be able to obtain the autogenous vaccine in many diseases where we are now not able to obtain it. The writer asked Dr. Brook, Pathologist of the New York Post-Graduate Medical College, if he thought there was efficacy in this proceeding. His answer was, "undoubtedly."

We will now take up the use of the ice bag and cold compresses in inflammation. Dr. Clive Riviere told us beautifully in the Proceedings of the Royal Society of Medicine, of the value of hyperemia in auto-inoculating the patient in inflammatory conditions, but he said nothing of anemia. By the application of ice packs the parts are blanched, the vessels are constricted at the focus of inflammation, the contents of the smaller vessels are forced into the surrounding healthy tissues and the patient is auto-inoculated. An interval of time must elapse here for the development of specific antibodies. Have we done this? It is apparent we have not. If heat were applied first and then ice, a much more serviceable weapon would be at our command. But here great care should always be exercised that we do not give too large a dose, for it may come at the very time when not desired. The cures made with anemia and hyperemia are auto-therapeutic measures, for they each tend to cure the disease with its own poisons.

The first thought that is bound to occur in considering the important role played by the staphylococcus, streptococcus and colon bacillus in so many diseases is that other diseases caused by other micro-organisms might be cured in the same or a similar way.

15. There can be no doubt that Lux, a veterinarian, a pioneer of this method of treating disease, made a big reputation about 1822 by curing many flocks of sheep and many shepherds of anthrax by giving the autogenous virus by the mouth. But Lux failed to recognize the great importance of the autogenous product, and drifted to using stock solution, or the heterologous product. For this reason he failed, and his system of medication

passed into history till the writer developed the cure and prevention of sepsis by giving the autogenous virus by the mouth, and by so doing placed this system of medication on a firm scientific basis.

It will be remembered that the dose enters only as a secondary consideration; that the condition of the patient determines the amount.

HYDROPHOBIA POSSIBLY PREVENTED AND CURED BY THIS SIMPLE METHOD.

In further substantiating the claim of the writer of being able to abort sepsis by simply placing the fresh wound, or the discharge from the fresh wound, in the mouth, he visited the dog catching station at East 102nd street and East River.

It is believed the bite from any animal is liable to result in an infection or sepsis, and possibly tetanus, and any neglect to thoroughly cleanse or cauterize the bite of any animal invites sepsis.

These dog catchers never have sepsis (if they are to be believed, and the writer knows of no reason to doubt their word as they were frankly interested and apparently honest) and they are bitten frequently. We cannot overlook these common observations; at times we can learn much from them.

Seven professional dog catchers and drivers of the dog wagons were interviewed; they each told the writer that they had been bitten by hundreds of dogs and many times by "mad dogs"; that they do not fear sepsis or hydrophobia or tetanus; that they are conscientious in sucking their wounds immediately upon being bitten by any dog. The result of these interviews can best be given in the words of the men themselves:

WM. H. DILLON (Dog catcher of the City of New York.)

Q. How long have you been catching dogs?

A. 17 years.

Q. Were you ever bitten by a mad dog?

A. (Holds out his hands where the writer counted many

scars, about 20.) Many times. (A fresh wound from dog's teeth made today, not all bites or abrasions from dog's teeth, leave scars.)

Q. How do you know the dogs were mad?

A. In the old Willard Parker Hospital they used to send the dog suspected of rabies with the patient to the hospital. They would send for me then to get the mad dog. They must always send for us when they corner a mad dog or cat on the street, and it is our duty to go and get it; we usually bring it back in a basket or by the wagon.

Q. Do you fear hydrophobia?

A. No.

Q. Why not?

A. Because I always suck the wound as soon as I am bitten. You know we are most always bitten on the hands as we reach for the animal.

Q. Do all the men suck their bites?

A. Yes.

Q. Do you do anything else?

A. I put on peroxide if I have it; if not, I don't bother.

Q. Do your wounds heal quickly? By that I mean do they ever have pus in them or stay sore?

A. No.

Q. How many dogs were brought in to-day?

A. Over a hundred.

Q. Is this an unusually large number?

A. No.

Q. Did you ever see a case of hydrophobia?

A. No, but I would like to.

Q. How many men have worked with you or been connected with the dog-catching business since you began?

A. I don't know; there are about a dozen men working now and they are always changing. In seventeen years I have seen a good many men at the business.

Q. Do they all suck their wounds?

A. Yes.

Q. Do you attribute the fact that you were never infected to sucking the wound?

A. I don't know; I was taught to do that when I went in the business and I've been doing it ever since. We all do.

MR. WM. T. HEFFERN:

Q. How long have you been catching dogs?

A. Between two and three years.

Q. Were you ever bitten by a mad dog?

A. Many times. (His hands had many scars, mute evidence of dog teeth.)

Q. How do you know the dogs were mad?

A. Because when I go after a mad dog it is because he has bitten some one, at times many people. I catch the dog and bring it to the doctors and they say it was mad.

Q. Do you fear hydrophobia?

A. No, I never think of it. Say, Doc, is there such a thing as hydrophobia in human beings? Be honest. We never see it, and we catch mad dogs all during the year.

A. (By the writer). Yes, there most certainly is.

Q. (By the writer) What do you do when a mad dog bites you?

A. I just suck the bite, that's all.

Q. Do all the boys suck their wounds when bitten?

A. Yes, all of us do.

Q. Did any of the boys ever get hydrophobia?

A. Naw, none of us ever gets it.

Q. Why do you suck your wounds?

A. To suck out the poison.

Ralph Husson, City dog catcher two years, offers a prescription for mad dog bites:

R. Just suck the wound and forget it.

M. S. Keep your mind free from thought.

Gus Henslein, dog catcher 17 years, says: "There is no such thing as hydrophobia in human beings. I got a bite once from a mad dog and forgot to suck it. It turned green, then I sucked it and it got well. If I get a bite on the face, I go to the hospital

and have the wound cauterized. I don't believe there is such a thing as hydrophobia in human beings; it's a man's own idea that drives them into what they term hydrophobia."

Three other men stood around while these four interviews were going on, all agreeing as to their experiences. All had many, many scars on their hands; they all told the same story; they all suck their wounds the first thing when bitten and they say they never have sepsis. (The writer is satisfied this is so, for it completely substantiates the well-known principle of auto-therapy he is developing.)

The virus on the lips and tongue of the dog must infest the side of the wound, and the dog catcher's lips and tongues must come directly in contact with this fresh virus. It is very probable that more of the virus gets into the patient's mouth than in the wound. The writer offers the above testimony as further proof of his method of preventing sepsis.

The writer is informed by the New York Health Department that their statistics show, during the first seven months of 1911, there were one hundred and seventy-three positively diagnosed rabid dogs seen by them in the City of Greater New York. This excludes those taken to the Pasteur Institute, so that the number in New York State must show an ever larger percentage, for farmers and people who live in suburbs and villages usually possess a greater number of dogs per family than do the residents of New York City.

The writer's hunting dog was bitten by a mad dog that had previously bitten several cattle. The cattle died of hydrophobia and the dog licked his wound and did not.

Again there is a well authenticated case of hydrophobia in Paterson, N. J., that came under the medical supervision of Dr. Theodore Bender, 127 Hamburg avenue, Paterson, N. J., that has direct bearing on the subject under discussion.

A little girl 8 years old, and her pet dog, were bitten by a dog, July 1, 1911. The father of the little girl immediately sucked her wound; she died of hydrophobia on July 25. The case was diagnosed by Dr. Wheeler, of the Pasteur Institute,

New York City, as hydrophobia; he saw her at ten o'clock on the evening of the 24th, said it was a typical case and she could not live till three o'clock; she died at 5 a. m. Her pet dog was bitten in the mouth, a part of his tongue was torn away; he was bitten also in the flank. He evidently got the virus in his mouth; he also licked his wounds; he did not die, but is well today, August 4. The writer saw him. One-half hour after biting her and her dog, the mad dog bit a horse; the horse died in two weeks,—they did not kill him; he is said to have literally chewed up his stall.

The father said he was sick after sucking the wound, but attributed it to the shock of seeing his only child bitten. The writer saw an account of this in the newspapers and upon investigation obtained the above facts from the parents.

We are led to believe that here is sufficient testimony to warrant further investigation by those best qualified to judge in such matters, and who are afforded the opportunity of studying this simple therapeutic treatment in connection with hydrophobia. And again, we know we get action from hydrophobia, the potentized heterologous virus of hydrophobia when given by the mouth, and believe we would also get action from the low potency or saliva. The virus of hydrophobia is excreted by the salivary glands.

Pasteur found the heterologous virus of hydrophobia tends to be curative, but experience for the past century indicates there is no certainty in cures with any heterologous vaccine unless it is proved and used in a homœopathic manner. Recent investigations by Wright, I believe, indicate that all autogenous vaccines tend to be more curative than stock vaccines.

The writer developed the fact that autogenous vaccination by the mouth in sepsis is more curative than vaccination by the method now in vogue. We see that there is much that points to hydrophobia as a disease that can possibly be prevented and cured by this simple therapeutic measure. We see that after all there appears to be some truth in the old medical saying, "The hair of the dog is good for the bite." The writer is informed that nearly

all undertakers and embalmers suck a wound when injured in working around the cadaver. In the medical school at Philadelphia, we were told by Dr. Weaver to suck any accidental wound we might receive in dissecting, and the writer well remembers Dr. Willard Cottrell, upon receiving a scratch on the ear, went around trying to get some one to suck his ear. Sucking a wound appears to be an almost universal custom and wounds do heal under this treatment, and yet we physicians have never recognized it.*

I would suggest here, as a point of investigation as to whether the universal custom of sucking the snake bite when possible, the efficacy is due (as has been supposed) alone to the sucking out of the poison, or whether the Biers' hyperemic treatment that is usually applied has any effect. Not every person bitten by a poisonous snake dies; not every person is bitten in such a place where he can get it in his mouth. The question as to whether those bitten in the range of the mouth show a larger percentage of recovery than those bitten out of range of the mouth, might prove of great value. It might be said that the action of the snake venom is so rapid there is not time for the development of the specific antibodies. Nature usually compensates and it may be the development of antibodies is also rapid and the Biers' hyperemic treatment that is usually applied may give them an opportunity to develop before the poison gets into the general circulation.

Again, let us remember we get action from the heterologous virus of the rattlesnake, viper and lachesis and hooked adder, where dilutions are given by the mouth and believe in giving a low potency or crude material, we would also get action by the mouth.

I ask myself the question, have I ever aborted tetanus in my minor dispensary cases by putting the wound of the patient in his mouth? The tetanus bacillus, we know, thrives in the alimentary canal of the horse and other animals. Have the dog catch-

* The writer would like to have it distinctly understood, that he offers the above observations on hydrophobia only as clinical observation, and clinical observations are liable to be misleading till they have been abundantly verified.

ers aborted tetanus by the simple method of curing disease the writer is developing? They never have tetanus if they are to be believed and they are bitten all the time by animals.

Can leucorrhea be cured by this method? Leucorrhea is the external manifestation of many internal disorders. The writer believes he cured one case. It appears reasonable to assume many internal troubles may be cured in the same or similar way. He placed about two drops of mucus in an ounce bottle of water, shook it up well and gave it to the patient to drink. She had a bad headache the next day; on the third day she said she felt well, and had no discharge. What of pyocyaneus, micrococcus catarrhalis, influenza, gonococcus autogens, etc.? The writer has had no extended experience with these, but right here makes an earnest plea for a further extension of the usefulness of the ideas he is developing. It is said by many that in this method of treatment consists the future of medicine where it is applicable.

The writer's experience with auto-therapy is almost wholly clinical. This is the way homœopathy was developed. Clinical experience is the court of last resort in determining questions relative to the therapeutic value of any medicinal preparation. In using auto-therapy, the opsonic index may be used if it is deemed necessary, but the majority of authorities are guided in the administration of vaccines by the clinical symptoms of the patient. "The criticism of this method as crude is unjustifiable for, with a skilled appreciation of the nature of the infection and the response of the individual, the dose can usually be fairly accurately gauged and readily confirmed by experiment."

VACCINATION THROUGH THE SKIN IN INTRA-ALIMENTARY, INTRA-PULMONARY AND OTHER DISEASES.

Having obtained the causative micro-organisms, it becomes our aim to inoculate the patient with their toxic substance, together with the toxic products of tissue changes, through the skin in the manner that will be both safe and curative. We have the identical native bacteria for our purpose. The fresh *nascent* toxic substance of the bacteria grown in the patient's own tissues,

is one of the substances nature employs in auto-inoculation, or when a natural cure is made. This is more curative than vaccines whose therapeutic value have been lessened by heat or by being grown in culture media outside of the body tissues. The different phases of the diseases can be met with the corresponding vaccine more accurately by this method than by the method now in vogue.

The two known methods of inoculation through the skin are by scarification and by hypodermic injection.

Hypodermic injection of dead bacteria by the method now in vogue needs no explanation, as we are all more or less familiar with the proceeding.

*At first glance, it would appear dangerous to inject live bacteria hypodermically, but Dr. Laidlaw appears to have done this successfully in many cases of pneumonia with no ill effect. He withdraws the fluid from the lungs of pneumonia patients and injects it under the skin without removing the point of the needle. He injected two cases for the writer. If I am correctly informed, none of his cases had abscess formations or suffered any ill effect. Both of the writer's cases had crises—one in six hours and the other in twelve, after the injection on the fourth and fifth day of the disease, respectively. I believe this is the average results he obtained. One practically hopeless case of a man of seventy, injected by the writer, died. The writer believes it would be better to filter the sputum before injecting it in the manner described in a later paragraph. But few of his cases developed micro-organisms when a culture was made from the substance withdrawn from the consolidated lung, and they responded to the treatment. This points to the conclusion that there *are* toxic substances besides those emanating from the bacteria, that are necessary for a cure. Experiments along this line in other diseases show that there are many toxic substances the products of tissue change, present in the focus of infections. In

* The writer does not recommend injecting live bacteria hypodermically now, but there is no telling what future experiments may develop in this direction. We believe healthy tissues at times can take care of a few pathological micro-organisms, and as the toxine of the live bacteria is most potent and curative, it is possible a very few in some diseases may eventually be proved to be beneficial.

clean wounds the products of tissue change are the cause of wound fever. These toxic substances, these products of tissue change, etc., are in pus, and when autogenous pus is placed in the mouth it is these that make it more curative than the vaccine prepared by the method now in vogue. For healthy tissues tend to react and develop antibodies when toxic substances are placed in them whether it be by the mouth or under the skin. In pneumonia, mix one part of the sputum to five parts of water; filter and inject as described elsewhere. The temperature dropped in every case where it was done within six hours. If the temperature should rise again give another dose (20 m. is a dose).

ASCITES. Gilbert, in 1894, says: "In case of pleural or peritoneal effusions, small quantities (1 to 10 C. C.) of the serous fluid are aspirated and the needle is withdrawn as far as the subcutaneous tissue, where the fluid is injected. The usual result is diuresis and rapid absorption of the fluid." No local reaction follows and the fluid disappears in from three to four days. (*London Lancet*, June 3, 1911.)

A case that appears to illustrate the curative action of the toxic products of tissue change when taken by the mouth is as follows:†

June 25th, 1911, †Paschal Romano was admitted to the Volunteer Hospital with a simple fracture of both bones of the left leg just below the knee. A fracture box and cooling lotions were applied but at the end of three days, there was noticed a slight discoloration of the toes. This continued until there was marked gangrene of the foot. On Saturday evening there was a very faint discoloration up to the seat of the fracture. Amputation was refused till the following Monday. When seen on Monday, the discoloration had extended on the under side of the leg and thigh up to the crest of the ileum. Examination disclosed the fact that there were maggots in the foot. He was delirious: temperature 105.

† In reporting a case of this kind the writer hesitates and tries to picture to himself the attitude he would assume at hearing another physician report a similar case. He is frank to say he believes he would be incredulous. But facts are facts and he reports them as he saw them. The internes and nurses of the Volunteer Hospital bear witness of its accuracy.

Cases of this kind seldom or never recover, even though amputation is performed well above the gangrenous area. However, as a last resort, the writer decided to amputate the thigh at the middle third. This was done, but the skin flaps were not sutured together, they were left open and the end of the stump was packed with gauze. The incision passed through about five inches of what appeared to be gangrenous tissue. This was hard and stiff like the back of a book; it was tough and black, and about $\frac{3}{4}$ of an inch thick. The fat globules, where cut, were white and shone like glistening pearls set in an ebony background. The prognosis, of course, was grave.

The writer had no idea of saving the patient's life, but believed he would die as he has seen so many similar cases die. However, about a cubic centimeter of the necrotic tissue from the foot was shaken up well in about four ounces of water. He was given a teaspoonful of this every hour for six hours. His temperature dropped immediately after the operation. The patient went on to an uneventful recovery and the blackened skin flaps did not necrose but returned to their original healthy state and the wound apparently healed with no slough.

Then there remains direct inoculation with the toxic product of the disease by scarification, or placing the crude discharge on a healthy raw surface. It may be claimed this is open to the same objection, that is, the danger of auto-infecting the case. The danger of a superficial infection is not so great as from a punctured wound. This practically is auto-inoculation. It is what the tissues themselves are attempting to do. It is the way nature cures the tissues. This is the remedy the tissues need; it is the remedy the tissues use to cure the condition. It is the substance against which the healthy tissues react in a curative manner and it may be that experience will prove that it is not easy to auto-infect the patient in this way in some diseases. Then, again, a possible reason for not auto-infecting the patient is on account of the lowered vitality of the micro-organisms, especially in chronic cases. The writer does not recommend this therapeutic measure till after a thorough investigation be made of its use.

Auto-therapy is like a two-edged sword. It is doubly useful if handled by intelligence, but great harm may be done in the hands of the ignorant and careless. Auto-therapy is not a cure at all, neither is any other therapy.

No one would think of putting the crude chancroidal virus on a raw surface or give it by the mouth. A skilled appreciation of the nature of the infection should always be the guide in administering autogenous products.

In auto-inoculating, if too great an aggravation should be obtained with the autogenous toxic substance, do not tend to destroy the therapeutic value of the substance by heat, but dilute it or triturate it. Its therapeutic power is raised by dilution; the toxic effect is lessened. Distilled water often may suffice; the patient's own serum is better, as a menstruum, if too much is not required.

There is a way the writer is developing of re-auto-inoculating the patient with the toxic product of micro-organisms and the toxic products of tissue changes that is free from danger of bacterial infection for many alimentary and pulmonary and many extra-alimentary and extra-pulmonary diseases. *This method consists in filtering the discharge of the disease and injecting the filtrate hypodermically.* Alcohol precipitates some bacterial toxins, just how many is not known. It is safe not to use it. If a menstruum is needed to dilute it, use the patient's own blood; possibly water will be sufficient in the majority of infections. If it is necessary to grow a culture of the offending micro-organism use the patient's own blood, oxalated or not as occasion may require. This is the ideal culture medium. The power of the serum is usually low. It is always at hand and the only wonder is that it was never thought of as the ideal culture medium for autogenous vaccines.

The next step in the process is filtering the mixture. This is done through a small porcelain filter, similar to the ones used in all biological laboratories, called a Berkfield filter. Filtration with this filter is the only means of sterilizing the serum of a horse that is used as a tetanus and other antitoxin preparations. Bacteria and spores of many diseases cannot go through this filter,

but the toxic substance in solution will. In filtering solutions containing some kinds of bacteria, too great pressure must not be exerted. The writer has designed an attachment to a filter to meet these conditions. The air pressure on top of the filter is obtained by means of an ordinary atomizer bulb and a column of mercury is arranged to equalize the pressure. When too great air pressure is exerted the air escapes up through the mercury. The mercury really acts as a safety valve in not allowing the pressure to become too great. One drop a minute is not too slow. It is a small Berkfield filter, with a rubber cork in the top, and an atomizer bulb attached to give slight pressure on the top of the solution in the filter. The range of application of this filter is very wide. It is especially applicable to many alimentary and pulmonary diseases and diseases associated with this canal and system, but it also may be used in many extra-alimentary and extra-pulmonary diseases.*

The filtered solution being free from micro-organisms may, as far as infection is concerned, be administered freely hypodermically if the proper care is taken in the filtration. The writer is treating a number of advanced cases of phthisis pulmonaris, he believes successfully, by hypodermically injecting their filtered sputa. They do not know what they are getting, but come back sleeping better, eating better, no evening rise in temperature, no night sweats, they are drowsy as we so often find convalescing tubercular patients. They say they feel fine, their skin clearing up and they feel like going to work. The dose was regulated in each case to suit the individual. There was a sharp local reaction, much redness, over a wide area, pain but no infection. It disappeared in between one or two days. One said, "That medicine makes me feel fine inside," tapping his chest. "I breathe easy." These are all tenement house cases and lack even proper food. They gain in weight from the very start. They have had no other medication. The writer offers this auto-therapeutic proceeding

* The writer wishes to thank the firm of Messrs. Eimer & Amend of New York City for courtesies extended in assisting in getting up the filter.

as of apparently great promise in treating pulmonary phthisis. Koch made the same mistakes Lux did. He used the stock preparations or heterologous product. Experience for the past century indicates there is no certainty of cure with the heterologous product. The greatest care must be exercised in administering the autogenous tubercular toxine for it is a weapon that is capable of doing a great deal of harm in the hands of the careless or ignorant, but on the other hand it is capable of doing much good by its skilled administration. A keen appreciation of the nature of the infection and the response of the individual and the stage of the disease are the determining factors that must enter into its successful administration. The present indications are that this new therapeutic proceeding shows great promise. No one is interested in what the writer or any one else believes. What the profession wants is facts or proof. On the other hand, when we review our present knowledge of the tubercular toxin, and what we know of auto-inoculation and consider the great improvement of these cases, we see that there is much that points to the conclusion that by the writer's simple therapeutic proceeding, pulmonary phthisis has been met squarely on its own ground. The results are most encouraging. It may be advisable in some cases of clinical tuberculosis to aspirate the infected area to obtain the toxic products of the disease for direct inoculating purposes.

The writer was called at 12 p. m. to attend a case of bloody dysentery. At least, he diagnosed it as such. A girl of 17 years had been complaining for twenty-four hours. When seen her temperature was 104 degrees, face red, no water or food was retained, constant purging. Stool like thin rice water and some blood. The writer took an ounce of her stool, filtered it, and at 1 a. m. injected about ten drops hypodermically. During the night a well-meaning friend gave her some cholera mixture and spoiled my demonstration. However, at 9 a. m. her temperature was 99. She made an uneventful recovery. The writer does not give this as a cure, but to illustrate the possible uses of auto-therapy. He believes it was the filtrate that cured this case.

There being no foreign proteid injected, anaphylaxis would be an impossibility by this method.

This may be a bedside proceeding and has an extensive range of application in infectious diseases. The writer suggests that experiments be made in treating typhoid and cholera and other diseases where the toxins are excreted in the feces by administering the filtered stool hypodermically.

The filtrate may be employed as an immunizing agent, to others who have been exposed to the disease.

CONCLUSION.

There never was a cure of bad infection that was not due to a reaction setting in the tissues. Reaction is the antithesis of action. The action of toxic substances that are developed during the course of the diseases tends to cause a curative reaction when they escape or are placed in healthy tissues. Remember, it is healthy tissues of any kind that react against toxic substances.

If we place the toxic substances that are developed during the course of the disease in healthy tissues, resistance to them will tend to be developed. The reaction and antibodies to these toxic substances in healthy tissues is the reaction and antibodies of the disease. Hence the tissues tend to react to the disease by reacting to these toxic substances.

Auto-inoculation employs all of the toxic substances developed during the course of the disease. This includes the toxic products of the bacteria and also all the toxic products of tissue changes against which the tissues react in a curative manner.

Auto-therapy employs all of the autogenous toxic substances developed during the course of the disease (the same as auto-inoculation), against which the tissues react in a curative manner. Auto-inoculation and auto-therapy both employ the same identical toxic substances in performing a cure. Auto-inoculation is the means nature employs in performing a natural cure. Auto-therapy is the means the physician employs in assisting nature in performing a natural cure, both being natural cures. They both employ first the unchanged toxins from the fully identified micro-

organisms, i. e., the organism that is fully identified with both the disease and the patient. No other therapy does this. Second, they both employ all the toxic products of tissue change, as enzymes, ferments, chemical changes in protoplasmic molecules, etc., etc. The tissues react against these in a curative manner. No other therapy does this.

Auto-therapy or autópathy is natural therapy, or, as the name implies, self-therapy. Auto-therapy employs nature's weapons in combatting disease; we cannot go behind it.

Now that the way is opened, other methods of safely administering the toxic products of disease may be developed. The development of several ways to safely place all of the toxic substances developed during the course of the disease, in healthy tissues is given in the text of this thesis. Any method or system of medication that employs all of the autogenous toxic substance developed during the course of the disease to cure the disease comes under auto-therapy. Auto-therapy cures disease with its own poisons, not with the altered bacterial poison alone, but with all of the toxic substances developed during the course of the disease against which the tissues rest in a curative manner.

There may be other methods developed for preparing the bacteria or preparing the enzymes, ferments, etc., but the vaccine to be most curative must be used in connection with these toxic products of tissue change, in localized and loosely localized and possibly non-localized diseases.

By using nature's weapons we but assist in arousing the natural forces within the body; they alone can bring about a perfect cure.

Auto-therapy is the link that joins isopathy and opsonotherapy.

Auto-therapy has a distinct advantage over even natural therapy. By auto-therapy the powerful secondary defenses of the tissues the antibodies are brought into play earlier than by the slower natural process. The patient is not so reduced by the fever, or taxed with the poisons of the disease. By placing the poisons of the disease in healthy tissues early and not waiting for

nature to do so, we are able at times to cut short or abort the disease.

Auto-therapy is the keystone in the arch of the great medical superstructure that has been raised by both dominant schools of medicine. As the keystone fills out the arch, joining the two leaning sides, so auto-therapy joins the two great schools of medicine by strengthening and beautifying each, for this is nature's method of curing disease.

The writer is indebted to a number of his confreres and co-workers for able and friendly criticism of this paper, for he wishes here to express his thanks and appreciation for the time consumed and interest manifested in the work he is developing:

Dr. Brooks, Pathologist, New York Post Graduate Medical College.

Dr. George F. Laidlaw, Professor of Diagnosis and Internal Medicine.

Professor Wm. H. Freeman.

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PRESIDENT "TOM" SMITH of the Veterinary Medical Association of New Jersey proved an ideal presiding officer at the recent meeting of that organization.

THIS ITEM IS SENT WITH THE COMPLIMENTS OF IOWA STATE COLLEGE: "There isn't even a nail missing in the description of the three poultry houses given in a bulletin, No. 132, *Farm Poultry Houses*, just issued by the Iowa Agricultural Experiment Station at Ames.

"Every detail and every step of construction is made clear by photographs, showing the exterior and interior alike, and by builder's drawings, showing the method of construction throughout, and by bills of materials that include every item needed.

"Three types of houses are described, two movable and one stationary. The 'A' shaped movable house may be built at a cost of \$39. The 'Iowa Colony House,' used first at the Iowa poultry farm at the station, costs about \$58. The stationary house is larger than either and may be built for about \$173 or \$180, depending on whether lumber and concrete or hollow tile and concrete are used.

"The Iowa Agricultural Experiment Station will send these bulletins on request."

TUBERCULO-INFECTION OF MAN THROUGH ANIMALS AND ANIMAL PRODUCTS.*

BY A. O. ZWICK, PH.G., M.D., CINCINNATI.

Tuberculo-infection of man through animals and animal products is essentially food transmission. At least I shall so take the subject which your president has done me the honor of proposing for my discussion. It is milk, cream, butter, cheese and meat, then, derived from tuberculous cattle that we must discuss, together with their effect upon the human economy when consumed, as they abundantly are, as articles of food.

At the Veterinary Congress in Cassell, in 1903, Von Behring stated that the development of tuberculosis is *always* the result of infection in childhood, which in the great majority of cases is caused by the ingestion of milk from tuberculous cows. We now know that this view is much too sweeping, and finds contradiction in a mass of clinical and experimental data since accumulated bearing on this point.

It is, indeed, as untenable as the opposite view, advanced by Robert Koch: "That tubercle bacilli of bovine origin are entirely *innocuous* to man." Since the astounding communications of these two men, the many, many investigations that have been carried on in various countries have abundantly proven that the human animal, particularly during early childhood, is capable of contracting bovine tuberculosis through the digestive tract, and probably through the tonsils. In J. B. Murphy's laboratory I examined numerous tonsils, removed on account of disease, and found over 50 per cent. of them to be tuberculous. In fact, at every period of his existence man, particularly on manifold, repeated or continuous exposure, is subject to tubercular infection, and the most important factor in the spread of tuberculosis is

* Reprinted from Year Book, 1912-13, Ohio State Veterinary Medical Association. Read before said Association at Columbus, January, 1912.

undoubtedly the transmission of the germ itself, recently escaped or expelled from a tuberculous organism, human or bovine.

Now as to these early cases of tuberculosis, acquired in childhood, latent though they be, there are two points of extreme importance to be considered. The first is the fact that such cases, up to a certain point, heal apparently easily; at least they readily become dormant, do not progress, are latent. But, and this is the second point, these individuals are extremely liable to a subsequent reinfection. There exists, as it were, a state of anaphylaxis—that is to say, literally, from *and*, off, and *phylax*, guard, a condition of being off-guard, then—occurring through a gradually becoming accustomed, acclimated, as it were, to the invasion, the encroach of a surreptitiously approaching, stealthy enemy lying in ambush, already on one's own ground, ready to spring out and make an overwhelming attack upon the unsuspecting, unprepared, surprised organism. This state of affairs reveals itself either by excessive reaction to tuberculin, or by the prompt severity of the symptoms displayed on exposure to renewed infection, even though the latter occur in adult life, while the early attack took place in childhood or infancy.

Hence here again the importance of combating, nay more, of heading off these early attacks, which in the great majority of cases are of gastro-intestinal origin through the ingestion of cow's milk.

Now you have the argument put up to you *net*: Most eminent authorities on both sides of the question advancing views diametrically opposed to each other!

Whose views are we to accept? *Neither!*

It is not a question of accepting views, nor of authority, nor of dogmatic assertion; it is a problem to be decided on its merits; it is matter for investigation and research, of close study of anatomical relations, of the direction of the lymph-stream, of the blood-current, to determine the routes of infection within the body. As a result of their investigations along these lines, Schroeder and Cotton, in a recent bulletin (1908-1909) of the Bureau of Animal Industry, conclude: "That the assertion that

tuberculosis is a negligible quantity in the measures that must be taken for the preservation of human health, is without basis in fact, and that there is no more active agent than the tuberculous cow for the increase of tuberculosis among animals, and its *persistence among men*."

On the other hand, *a priori*, the comparative rarity of primary intestinal tuberculosis, on which point there is, however, a discrepancy of statistics, apparently does not favor the idea of tubercular infection by ingestion of food.

But even though as stated by Koch, pulmonary consumption constitutes eleven-twelfths, and all other forms of tuberculosis but one-twelfth of all cases of tuberculosis, there is nothing so conclusive about such statistics as may at first sight seem to be the case. The question as to the primary site of infection, the port of entry, still remains open, debatable ground!

It has been proven, as already mentioned, that tubercular-æro-infection probably may well take place, in fact, undoubtedly does take place through the tonsils. I have spoken of my own experience while conducting the laboratory work for J. B. Murphy's surgical clinic in Chicago some years ago. Again, Latham, a competent observer, considers that not less than 25 to 35 per cent. of the cases of tuberculosis which occur in early childhood are due to intestinal, and therefore presumably, to food infection. Now that the origin of tubercular infection of the lungs may well take place in the tonsils is admitted by all. They are known atria of infection for various constitutional diseases. The transmission of the tubercle germ from the tonsil through the chain of lymphatics in the neck down into the lung has been abundantly demonstrated. Why then should not transmission of the tubercle germ through the body lymphatics be equally possible, and being possible, as I shall show you, equally plausible as a probable source of infection with tonsillar infection, nay more. Remembering the constant and regular consumption of such articles of diet, usually unsuspected of contamination and therefore commonly long derived from a given same source, infected yet unsuspected though this source may be, why should not food-infec-

tion play at least an equally important role with air-infection, digestion and ingestion methods of infection with inhalation, gastric and intestinal with respiratory, pulmonary ways of infection?

Before I am through I believe I shall have, from the close study of this subject which I shall present to you here to-day, convinced you that in all probability the gastro-intestinal tract is by far the more important route of tuberculo-infection, far more important than the respiratory, in fact by far the most important route of all! In other words, gentlemen, and that is exactly what I propose to do, I shall have laid the burden of the protection of the public, of the human race, against a further spread of the great white plague, this scourge of humanity, where I believe it belongs, that is to say: At your door!

It is true that when comparing the tonsillary entrance with the intestinal we must admit that we frequently, I purposely say and emphasize *frequently*, find the tonsil diseased, not always; while in a large proportion of the cases of pulmonary tuberculosis which I shall contend are due to the consumption of tubercular food, I have to admit that we frequently find the intestines apparently free of foci of the disease. This seeming discrepancy is easily disposed of, however, by the now well-established fact that tubercle bacilli may pass through an uninjured, perfectly sound and whole mucous membrane without causing any localized lesion or even leaving any traces behind them at their point of entrance! This is a fundamental fact that militates with irresistible force against Koch's strongest argument: The overwhelming preponderance of pulmonary tuberculosis as compared with all other forms of tuberculosis, being as eleven-twelfths to one-twelfth.

Dr. Karl H von Klien, now of Chicago, formerly surgeon in the Russian army, who was present at the International Congress in London when Koch declared that tuberculosis cannot be transmitted from animal to man, tells me that all his friends tried to persuade him not to read his paper, but with stubbornness he insisted on presenting it just the same, and, as Dr von Klien says. "that started the ball rolling, and it has been rolling against him ever since!"

In 1908 Koch was "of the same opinion still. I was myself present at the sixth International Congress against Tuberculosis in Washington, D. C., during the discussions of the special committee appointed to consider this matter. I have had the honor of reading a paper on this famous conference before the Ohio Society for Comparative Medicine at their meeting in Cincinnati, and have with me for distribution after this lecture an abstract of these historic liberations, taken from the records of the Congress. Koch therein still maintains his original position—again with stubbornness and against the arguments of his friends who in vain begged him to yield. The grounds for his insistence on his views together with a description of his ingenious reasoning are laid down in my pamphlet on the subject.

Close investigation and study, however, reveals that his position is untenable. If we believe with von Behring that food transmission is an important path of invasion of the human organism by the tubercle bacillus, in spite of the fact that the integrity of the intestinal mucosa in a large majority of the cases is preserved, then it behooves us to show the possibility, nay the probability, of such a course of infection by studying the physiological mechanism by which the blood and lymph, including chyle, the circulating media of the body, perform their functions, for it is through them alone that such transmission of the germ of tuberculosis from the intestinal port of entry, which we are presupposing, could take place.

I believe we shall find that this route through the stomach is quite as direct as the one through the lungs—if not more so. But, at this point, some one might object: "Is not the gastric juice a good agent of disinfection, of destruction of the tubercle bacilli?" I will ask in return: "Does it always then, with dependable uniformity and regularity, destroy the germs of typhoid fever?" We know that it does not!

As Wladimiroff, in his beautiful lecture on the "Biology of the Tubercle Bacillus," delivered in Washington before the Anti-Tuberculosis Congress in 1908, well says: "The old-time belief that the gastric juice destroyed the bacilli in the stomach is very

much weakened by more recent observations and experiments. Sometimes, and, unhappily rather often, the bacillus will pass safely through the intestine after traversing the stomach, and the secretory, or rather the digestive, better even the absorptive functions of the intestine are favorable to the bacillus. And thus it is that once arrived in the intestine, the bacillus has but to follow the ordinary route traversed by the nutritive body juices, the chyle, the lymph, the blood, to enter your heart's blood, with this the lung, where the blood-current growing slower, there are conditions presented that are quite favorable for the bacillus to become localized, and to develop."

As regards the supposed protection of the individual against tubercular invasion by the gastric juices, I believe that the latter offer far less protection against the tubercle bacillus than against the germ of typhoid fever, and yet all will readily agree that the latter must quite evidently succeed in safely traversing the stomach and reaching the intestine, where it localizes and produces its characteristic lesions.

My ground for this belief is the special manner in which the tubercular invasion by the gastric juices, I believe that the latter in microscopy to make this germ visible. Indeed it was by the discovery of these and correlated facts that Koch was enabled to again in turn discover this microbe, just as his work with these same dyestuffs led Ehrlich at the end, as the final outcome of his many brilliant successes, to the discovery of "606," that most successful example of the new, truly scientific, art of healing, chemotherapy.

That the various bacilli can be made visible by staining with the anilin dyes is, of course, well known to all; and that the bacillus tuberculosis behaves in a special way towards the dyes is, of course, also a familiar fact, viz., not only that we must use mordants in order to stain it, but it is absolutely a distinguishing mark or characteristic of this germ, that once stained it retains such stain even in the presence of acids. It is acid-fast.

But do we keep this fact sufficiently in mind as an explanation of its murderous power? In other words, if this germ will resist

the effect of 15 per cent. to 33 per cent. nitric acid and strong alcohol, what chance have the gastric and intestinal juices in dealing with it? I believe the destructive power of the gastric juice in the face of such a murderous germ as this to be a myth, pure and simple. To further bring out this point, I will dwell but a moment on the peculiar chemical constitution of the germ, as it may, in fact probably does, explain its invulnerability to acids. I allude to the fact that this bacillus is composed not only of albumin, "the life substance" which our organism could easily handle and do away with, but that throughout the whole of its mass and covering its exterior like a coat-of-mail or like a battleship's armor there exists a combination of several of the substances classed by chemists as fats or waxes! And these fats or waxes not only are evidenced chemically by this acid-fast coloration but have other biological significances of the utmost importance to the tubercle germ and—unfortunately, to us. Not only does it form a defensive and protective membrane to the little germ but it penetrates, like a skeleton perhaps, the interior of its organism, and forms in fact, or makes of it rather, as Wladimiroff, whom I have already quoted, says, a spongy, waxlike carcass, resisting not only external influences, especially drying, but also the penetrating efforts of the gastric juices and again the devouring defenders of the animal organism, the phagocytes; these can take up the tubercle germs within their body, but, in all probability on account of the waxlike envelope and skeletal structure, evidently cannot resorb and digest them—they try in vain to destroy these microbes like they successfully do practically all others. And it is again this precious wax that protects these bacilli against rapid drying, which would be fatal to their vital albumin. Indeed, the resistance in this respect, the resistance to drying, the microbe of tuberculosis is immeasurably greater than all other germs (Wladimiroff). And again, though it does not form spores, thanks to its waxlike coat of armor the tubercle germ has no need of doing so. Some observers think they have discovered spores, but there is still some doubt on that score. Wladimiroff, of St. Petersburg, whom I have repeatedly quoted,

says on this: "The tubercle bacilli do not offer the resistance to physical and chemical agencies, especially not to high temperatures that is characteristic of true spore-forming microbes.

One other fact concerning the tubercle bacillus, and then we will take up the transmission of the germ by the circulating liquids of the body from a given point of entry, here the intestinal canal, to the point of attack, the lung frequently enough, showing that the former is easily possible, and the latter, as a consequence, probable.

The bacillus tuberculosis is not able to multiply except in the interior of a living organism, for two reasons: In the first place it cannot grow except, or rather grows best, at the body temperature, the temperature of the blood; and in the second place it cannot elsewhere, except in the laboratory, find the suitable culture media for its successful propagation. From this it results that the tubercle bacillus is an obligatory parasite which cannot thrive outside the animal economy, a fact of capital importance in the warfare against tuberculosis. That the apparently differing types of the tubercle organism—the avian, the mammalian, including the varieties of the bovine and the human, etc.—are merely adaptation forms to the different animal organisms with which the germ has to deal, I need not dwell on here, except to mention that this is merely added evidence of the extreme viability and adaptability of this germ to changing surrounding conditions of media, temperature, species of animal (host) and other vital requirements for its continued propagation and existence, the dangers to the human race being increased by just so much as the germ is capable of thus adapting itself to its environment. It is a matter of fact, even, that the germs derived from many different patients, human beings, are not always identical, varying in tenacity and resistance, and in degrees of virulence towards laboratory animals.

Physiological Considerations.—The body fluids are the chyle, the lymph and the blood. The chyle is merely the name given to the lymph coming from the alimentary canal; it is lymph to which has been added some of the absorbed products of digestion. They

are chiefly particles of fatty matter or minute oil globules, some of which are of appreciable size; the greater number, however, are immeasurably small. Like the fatty globules suspended in milk, they give the chyle a similar "milky" aspect; otherwise it is identical with lymph. Therefore we can, with Stewart, describe the circulation of the food-substances in the economy of the higher animals in one phase by saying, *the blood feeds the lymph and the lymph feeds the cell*, since no blood-vessel is believed to enter a cell. The blood contains at one time and another everything that is about to become a part of the tissues, as well as everything that has ceased to belong to them.

Whether the leucocytes play any part in the normal nutrition of the other cells is not certainly known, but they have another important function which it is necessary to refer to here.

Phagocytosis.—The phagocytes, *i.e.*, cell-eaters, are certain ameboid cells of the blood and lymph which are able to include or "eat up," devour or absorb foreign bodies with which they come in contact, in the same way as the ameba takes in its food. The behavior of these phagocytes towards pathogenic micro-organisms, is, to us here, now, of greatest interest and importance. We owe our knowledge on this subject to Metchnikoff, who showed by his researches on daphnia, a small crustacean with transparent tissues observable under the microscope, that when daphnia is fed with the spores of a fungus, the monospores, these spores find their way into the body cavity of daphnia, where they are at once met, attacked, ingested and destroyed by the leucocytes. But—and note this—after a while so many spores get through that the leucocytes cannot handle them, at least are not able to deal with them all; some of them develop into the first or conidium stage of the fungus, and the conidia, instead of being destroyed by them, kill the leucocytes, and generally the animal dies. Occasionally, however, the leucocytes are able to destroy all the spores, and the life of the daphnia is preserved. This battle, ending sometimes in victory, sometimes in defeat, is believed by Metchnikoff to be typical of the struggle which the phagocytes of the higher animals, including man, engage in when germs of disease are introduced into the organism.

Diapedesis.—Waller and Cohnheim have demonstrated it to be a fact that leucocytes can pass out of the vessels into the tissues, and this fact has a very important bearing on the phenomenon of phagocytosis just described. It can be observed by irritating the mesentery of a frog, when of course, all phenomena of inflammation follow, the first effect being an increase in the flow of blood through the affected region. If the irritation has been severe enough, or continues long enough, the current slackens, the corpuscles stagnate in the vessels, and inflammatory stasis is produced. The leucocytes adhere in large numbers to the walls of the capillaries, particularly the small veins, and then begin to pass slowly through them by ameboid movements, the passage taking place in the junction between, or it may be right through, the substance of the endothelial cells. And if these leucocytes happen to be loaded with tubercle bacilli, which for reasons given, they have been unable to digest, these bacilli have been implanted in the, to them, ideal culture-medium, the tissues of a living animal body.

It is then plain: the absorbents, or lymphatics, gather the bacilli with the food material from the alimentary canal and transfer them to the different parts of the body, also pouring them out into the blood stream, and thus causing further dissemination. That such passage of the leucocytes can take place without the phenomena of severe local inflammation occurring, is undoubted; that it would most readily occur where the blood current is slow and the capillary network fine-meshed and intricate, is self-evident.

The comparative slowness of the current and the disappearance of the pulse are the chief characteristics of the capillary circulation. The explanation is readily found in the great resistance offered by the narrow and much-branched vessels; the wider the bed, the shallower the stream, the slower the current. As Stewart says: "The rivers of the blood are, even at their fastest, no more rapid than the sluggish stream. The mean velocity of a particle of blood in moving from the heart to the femoral artery does not, according to even the most liberal calcula-

tions, exceed 150 mm. per second for the whole of its path. This would correspond to rather more than one-third of a mile per hour. In the arch of the aorta the average speed may be twice as great. Yet a red corpuscle, even if it continued to move with the velocity with which it set out through the aorta, would only cover about fifteen miles in twenty-four hours, and would require five years to go around the world." (Stewart's Manual of Physiology.) Although the average diameter of a capillary is only about 10 μ (5 to 20 μ in different parts of the body), the number of branches is so prodigious that the total cross section of the systemic capillary tract has been estimated at 500 to 700 times that of the aorta. The total cross-section of the vascular channel gradually widens as it passes away from the left ventricle. In the capillary region it undergoes a great and sudden increase. At the venous end of this region the cross-section is, however, again somewhat abruptly contracted, and then gradually lessens as the right side of the heart is approached; but the united sectional area of the large thoracic veins is greater than that of the aorta. (Stewart, page 105.) In man, Stewart adds, the pulmonary circulation-time is probably usually not much less than twelve seconds nor much more than fifteen seconds—a comparatively long time. (Stewart, page 111.)

Anatomical Considerations.—These are of two kinds—such as refer to ordinary *normal* anatomical conditions, and such as are abnormal.

A word about the latter: It is especially to the arrangements of the blood-vessels that I have reference. As is well known, they are subject to numerous variations. These may consist of a deviation either from the usual size of the channels or from their usual position and their connections with other vessels. Many of these varieties, if less efficient, are, nevertheless, not only compatible with life, but cause no disturbance whatever in the performance of the ordinary functions of the body. Others, again, are of such a nature as to be compatible only with the conditions of the circulation subsisting during intra-uterine life, and therefore prove fatal at birth. Some are of considerable interest from

their frequency, and others from the fact that they exist in situations where they are liable to affect the progress or results of surgical operations.

Many vascular variations repeat forms which are natural in different species among the lower animals, representing a hark-ing-back in some cases to forms that have perished; others are obviously due to the persistence of early fetal forms of distribution and not a few are explicable on the supposition of abnormal enlargement or diminution of caliber of naturally existing vessels. Again, the dimensions of the arteries vary to some extent in different individuals, in the two sexes, and at different periods of life. Now, may some of these variations from the *so-called* normal not *also* represent *lesser degrees of efficiency* in the vascular system of the individual, so shall I not say, afflicted?

My idea is that tuberculosis depends perhaps much more than commonly thought upon *anatomical predisposition to infections*. How often do we observe that a family history indicates a marked predisposition to tuberculosis? Of course, this predisposition "resides in the tissues," but are we entirely sure that it resides in their quality, in their physico-chemical, biological characters, in a species of degeneration, vitiation, depravity of their vital characteristics, as the argument usually runs? I am of the opinion that such predisposition, or I would rather say, predetermination, resides to at least an equal, perhaps a preponderating, dominant degree and extent in their anatomical arrangement.

Now, this idea is not new. Confer the views of Hippocrates, the father of medicine, on this very point: the winged or alar type of chest, characterized by the everted, winglike scapulæ projecting from a flat, narrow thorax, was described by him four hundred years before Christ, twenty-three centuries ago, as predisposing to affections of the lungs; the typical alar, phthisical thorax! Consider: the usual seat of the primary lung lesion is one of the apices, usually the right. After one apex has been attacked the disease usually extends first to the *apex* of the lower right lobe (or, at any rate, that of the same side that has first been attacked in the upper apex), and then to the *other*. Would

it not rather be the whole lung of the *same* side that would be involved?

And, why, if not on account of anatomical peculiarities, is the right lobe more frequently, in fact, as a rule, the first to be involved by the tubercular process. Furthermore, wherein is this tissue-predisposition to find expression? It *must* ultimately reside in some way in their anatomical characteristics; in physical vasculo-mechanical arrangements, rather than in some mysterious depraved cell-quality, for which we know as yet at least no equivalent, no expression!

That is where I prefer to seek it. Cancellated bone-tissue in a sense resembles the lung-tissue, and the conditions, anatomically speaking, that surround a tuberculosis of the lung, to my mind, in some respects exactly parallel a case of osteomyelitis. The trauma, the interrupted, slowed blood-stream, sluggishly wending its way through the fragments of bone, impeding its flow and carrying with it the messengers of pain, inflammation, suppuration, destruction, fever, chills and death perhaps—the infecting germs—all the corresponding phenomena are present! And, if that be not the case, then why do we have primary tuberculosis of brain, of bone, the heart even (Vargas), and other tissues and organs, where the disease cannot possibly be attributed to germ-inhalation?

Inflammation of bone always originates in its vascular structures, *i.e.*, the peritoneum and medulla and never (Green's Pathology, page 522) remains strictly limited to either of these parts; hence, the term osteomyelitis, inflammation of bone and marrow. Conner's description must forever remain classic: 'Tis a pity that he wrote so little, but his classroom lectures will never be forgotten by those whose good fortune it was to listen to them!

Among the bones which are primarily affected are the bodies of the vertebræ, the *ends* of the long bones, the bones of the carpus and tarsus, the phalanges, and less often the metacarpal bones and the ribs. The *shafts* of the typical long bones are rarely affected by tubercular processes; that is to say, cancellated bone is

the seat of election for the attacks of pathogenic micro-organisms, because I take it, the circulatory conditions, much resembling those of the lungs, are favorable to such processes.

In 1626 Harvey demonstrated the circulation of the blood in his work, *De Motu Cordis et Sanguinis*. That the blood passes from the arteries into the veins is a necessary corollary of this doctrine, but the mode of passage through the capillaries was not ascertained until discovered by Malpighi in 1661. These are most commonly arranged in a network of nearly uniform size in a given part, though not strictly equal. Speaking generally, their average size may be stated to range from 1-3,500 to 1-2,000 of an inch. Weber describes some as small as 1-4,500 of an inch, and Henle even smaller, some so small, at least on post-mortem examination, as really not to permit a blood-corpuscle to pass!

Now, the smallest of them are in the lung, where the capillary network is very close, as it also is in glands and secreting structures, as well as in the gray part of the brain and spinal cord. And in infants and young persons the tissues are comparatively more vascular than in later and adult life, *i.e.*, vascularity goes hand in hand with tubercular death rate! We need only allude to the filtering function of the lung to make our meaning plain and understand the fact. Right here, however, the question might be asked, why, then, does not syphilis, in the self-same manner, as is claimed by this paper, for tuberculosis reach the lung and localize there? Perhaps this slide shows the reason, at least in so far as it shows a distinctive difference in the behavior of the spirocheta pallida and the tubercle germ towards the blood corpuscles; the spirocheta pallida does *not* enter the blood corpuscles, hence is not *by them* conveyed to distant parts. Such opposite behavior is further illustrated by the different behavior of syphilis and tuberculosis in other respects. The same argument holds good with regard to, for instance, the germ of the sleeping sickness. Going farther, the explanation of the difference in the behavior of the two germs, and others, in fact, for that matter, may with justice and probability be sought in Ehrlich's side-chain theory.

The tendency of pathological processes induced by syphilis is *sclerosing* in character, while that of tuberculosis is resolving, resulting in the production of fibrous tissue on the one hand, in the case of syphilis and in the resolution, the breaking down of the tissues on the other hand, in the case of tuberculosis, in general, though we do know of a fibroid phthisis, and in bovine tuberculosis of this type the tendency to the formation of fibrous tissue, histologically predominates apparently, the lesions themselves, macroscopically, taking the form of nodes and conglomerates, which on serous membranes may be pedunculated, so-called pearl disease. So much for anatomical considerations, normal and abnormal

This distinction that I make between normal and abnormal, meaning with abnormal *not* pathological, but sound, healthy; abnormal merely in differing from a typical established prevailing, usual arrangement—would serve to explain why in a group of individuals otherwise exposed to absolutely the same living conditions, food and environment, some escape the disease while the others, sometimes but a single one, fall a victim to it.

The inheritance of family peculiarities, no doubt equally often expressed in the arrangements of the finer anatomical vascular peculiarities the same as, familiarly, with facial resemblances, would explain the family tendency to the disease so often observed without evidences of the disease itself until it suddenly becomes manifest.

CONCLUSIONS.

Had it been my intention to merely assert the importance of the intestinal tract as the chief primary source of even pulmonary tuberculosis, I could have made such assertion and easily cited the strongest evidence in support of it.

While I shall still adduce such testimony, this was not my original purpose. I rather desired to study the explanation of the mechanism by which pulmonary infection through such sources could be, and, in fact, is brought about, and that is what I have endeavored to do.

It may still be well to show you that there is a brilliant galaxy

of original investigators who can be called upon to verify the statement that food infection, through meat and dairy products, in all probability constitutes by far the greatest cause of even pulmonary consumption. For proof of this we need only refer to the excellent summary of this subject contained in the United States Government report, issued by M. J. Rosenau, Director of the Hygienic Laboratory, Bulletin No. 56, on milk and its relations to the public health, in March, 1909, beginning page 540, under the caption, "The Virulence and Vitality of Tubercle Bacilli in Dairy Products."

Attention is here called to the fact that the inhalation theory, to account for the frequent presence of tuberculosis in the pulmonary tissues has *not* been proven, and that living tubercle bacilli in dust are hard to find or could not be found at all, sputum in fact being very hard to pulverize, and sunlight very easily killing the germs in a few minutes (five to ten) in the translucent material.

On the differences between types of bacilli of the same species, depending on hosts and environments, I have already dwelt sufficiently: Theobald Smith's work can also be quoted in proof of the fact that these distinctions are only seeming, as far as constituting entirely different organisms are concerned, that as a matter of fact the tubercle bacillus includes so many different types that their extremes would leave us in doubt as to their specific classification if they were not connected by a chain of forms of transition.

Mohler and Washburn even conclude, after a comparison of many tubercle bacilli from different sources and careful search of the literature, "that the more the subject is studied the more numerous the instances become in which bacilli of different special types are found occurring naturally in animals far removed from the species which was supposed to be their natural host." We can find nothing in their work to encourage us to undervalue the importance of those from bovine sources as a menace to the public health.

Fibiger and Jensen, among thirty-nine cases of primary tuber-

culosis of the intestines and the mesenteric glands examined by the Imperial German Health Office, found thirteen to be caused by bacilli of the bovine type, and summed up their conclusions as follows: Though bovine types of bacilli are more commonly isolated from bovine lesions, and human types from human lesions, there are cultures that must be considered to be transition forms, having *some* of the bovine, and others of the human type. They also state that the former doctrine which taught that primary intestinal tuberculosis is a rare disease can no longer be considered sound.

Gorter, after careful studies, concludes that human and bovine bacilli are not different varieties, and that the conversion of the one type into the other actually occurs.

Sargo and Suess showed that these mutations were of a character to preclude grouping tubercle bacilli from animals of the different species as special varieties.

Von Behring's views, who ranks as one of the most widely recognized authorities on tuberculosis, we have already quoted at the outset of this paper.

The British Royal Commission on Human and Animal Tuberculosis comes to the same conclusion, viz., the close causal relationship between human and bovine tuberculosis.

Aufrecht in 1900, and Baumgarten in 1901 pointed out that inhalation had not been proven to be the exclusive or even the most important mode of infection with tuberculosis.

Nicholas and Desces in 1902, confirmed by Ravenal in 1903, proved experimentally that tubercle bacilli introduced into the healthy intestinal canal of animals rapidly passed through the uninjured mucosa and appeared in the great thoracic duct on their way to the venous circulation.

Earlier, even, Nocard and his pupils, Desoubry and Porcher, had shown that the passage of bacteria through the normal intestinal wall and their transference to the blood was possible.

It is true that tuberculosis is more commonly an affection of the lung (11-12) than of other portions of the body (1-12). The explanation for this, which was long regarded as satisfactory and,

unfortunately, is still accepted by many, rests on the assumption that the most important source of tubercular infection is finely pulverized tuberculous material, suspended in the air, as dust, and the *direct* exposure of the lung to this dust through the process of respiration. And, of course, if this so-called "inhalation theory" represents the truth, and, further, if it were a fact, as many of those who maintain it, assert, that tubercle bacilli *cannot* pass through the uninjured wall of the digestive tract and reach organs remote from it without leaving evidences of their passage, *then* tubercle bacilli in dairy products have *no* important significance for the public health.

That is why there has been given so much thought to the mode of infection, to the gateway through which the bacilli enter the body.

But as long ago as 1868 to 1874, Chavreau brought about pulmonary tuberculosis by the ingestion (*per vias naturales*) of tubercular material *without* producing pathological conditions in the digestive tract.

And recent investigation prove more and more conclusively that the introduction of the tubercle bacilli into the body with food may lead directly to the development of pulmonary tuberculosis without lesions in the alimentary canal and without intermediate lesions of disease on the pathway between the digestive and respiratory organs.

The most important investigations on this subject are probably those of Calmette and his associates, among whom my teacher, Georges Petit, of Paris, 1907.

These investigators claim, and are worth quoting in full in support of their claim, that dust particles *never* penetrate further into the lung than to the first branches of the bronchi; that tuberculosis is *constantly* a disease, the infection of which enters through the intestines; that tubercle bacilli may penetrate the intestinal wall *without* causing lesions (how, I have shown you); that the bacilli may pass through the mesenteric glands without causing lesions; that the bacilli frequently cause primary lesions in the mesenteric glands of young experiment animals (because

there is greater proliferative, protective activity in the gland-tissue of young animals), but commonly pass *through* those of adult animals, and then cause primary pulmonary tuberculosis; that tubercular processes of the lung *never* begin in the bronchi or alveoli, but *constantly* in the capillaries, especially in the finest capillary network of the subpleural tissues, etc.

The capillary system of the lungs is a double system—a deep, penetrating system—and a superficial sub-pleural system, hence tubercular pleurisy so common. But Aufrecht's work relative to this localization of the *earliest* lesions of pulmonary tuberculosis is really conclusive. Here it is: "First, the initial changes of the apices of the lungs, as I have convinced myself, by repeated anatomical examination, do *not* spread from the terminal branches of the bronchi, and, second, the cheesy tubercle in the lung is associated *not* with the finer branches of the air-tubes, but with the terminal capillaries of the pulmonary arteries."

And while not especially an advocate of the intestinal route as the sole mode of infection, he ends his article here referred to with these words: "The inhalation theory for lung tuberculosis is no longer tenable." (*Kohler.*)

Orth makes the statement that even with localized tuberculosis in the lymph glands and the lung, we *cannot* exclude the intestine as the portal of entry of the tubercle bacillus. At the International Conference, held in Vienna during September, 1907, he said the tubercle bacilli can enter the body from the intestinal canal, which might itself, however, remain completely unaffected. Moreover, from the prophylactic point of view, the channel of infection was of only secondary importance, as the object to be aimed at was the destruction of all *sources* from which infection might take place. And as sources of infection he named milk and butter from tuberculous cows and sputum from tuberculous individuals, and bovine tuberculous he characterizes as undoubtedly infectious for human beings.

Klebs has convinced himself that tuberculosis is a disease of the lymphatic system, and may remain such until the end of life, and that infection occurs through the intestines, most frequently

with bacilli contained in cow's milk. He claims to have established this as a fact with experiments made at Berne and published in Virchow's *Archives* in the early seventies of the last century. He says that he has found no reason to change his views, and calls attention to the conclusive manner in which they have been proven by the unimpeachable experiments of Orth, Von Behring and Calmette.

Corter adds his testimony to show that the intestinal mode of infection is not rare, and Bougest showed with rats, as was shown by the Bureau of Animal Industry, with hogs and cattle, that the injection of pure cultures of tubercle bacilli into the portions of the body as remote as possible from the thorax, caused pulmonary tuberculosis *without* intermediate lesions to connect the location of the disease in the lung with the portal at which the infecting bacilli were introduced.

Vargas, in his article before the sixth International Congress on Tuberculosis, well says, the lung has a very important function; it filters or strains the foreign particles from the blood, retaining the bacilli.

Calmette and Guerin have shown that pulmonary anthracosis does *not* occur through the inspired air directly, but after the coal-dust has first been absorbed by the mucosa of the digestive tract and *then* passed on to the lymphatic system.

Sir Wm. Whitla and Symmers, inspired by these experiments, introduced into the stomach or peritoneum of animals India-ink and coal-particles; they passed the intestinal epithelium without leaving any trace, reached the nodes and lymphatic vessels, and from them passed on to the blood, to be detained by the pulmonary capillaries.

Enough, I think, has been here quoted and submitted from the many investigations that have been carried on to serve to prove the fact that tubercle bacilli can and do penetrate the wall of the digestive tract without affecting it and pass to the lung and there cause lesions, that it will not be necessary to go farther into this aspect of the question; it has been abundantly demonstrated that the intestinal mode of infection for pulmonary and

other forms of tuberculosis, unlike the inhalation mode directly into the lung tissue, is not merely a theory, but a well-established truth which has *forced* its way to recognition in the face of considerable opposition. Neither can the prevalence of tuberculosis as a pulmonary disease be used, as even so great an observer as Koch did, as an argument to underestimate the danger of tubercle bacilli in dairy products; on the contrary, the mode of infection with tuberculosis, the certainty with which tubercle bacilli may enter one portion of the body and leave it entirely unaffected and cause disease in other remote portions of the body, *condemns dairy products infected with tubercle bacilli as a serious menace to public health.*

Continuing to quote from the Government report: We may also conclude, as far as it is possible to test the vitality and virulence of tubercle bacilli from different sources and in different environments, that those from cattle are, as a rule, the most virulent, and that it would seem clear that dairy products generally, and butter especially, supply an ideal medium for the preservation of both the life and the virulence of tubercle bacilli. It might be mentioned that the danger from meat is, as a matter of course, minimized, because of the heat as a rule applied in preparing it for the table, be it by cooking, roasting or other methods, as the case may be.

Therefore the elimination of tuberculosis from the dairy herd is urgently recommended, not only because tuberculosis among cattle is a serious cause of pecuniary loss, as Uncle Sam's report has it, so serious indeed that from the strictly economic point of view it must be regarded as the most important problem that those interested in animal husbandry can undertake to solve, but because, as I hope I have been able to show you, the protection of the public health urgently requires it.

I feel that in thus presenting for your consideration anatomical facts co-ordinated and brought into intimate relationship, I have submitted matter of the gravest import concerning the problem of the causation and spread of tuberculosis.

I feel that there is basis enough to warrant the most thorough

investigation of the aspect of the problem which brought us together here today, viz.: The food-route, the gastro-intestinal paths of conduction of the disease.

To a further direct elucidation of the mechanism by which tubercular infection is thus introduced into the human body, especially its localization in the lung, I shall henceforth devote all my energy.

REFERENCES AND BIBLIOGRAPHY.

From the following works I have frequently, liberally and even literally quoted, and am therefore correspondingly indebted to their authors, which I hereby beg to acknowledge:

The anatomical and physiological considerations advanced are taken from: "Quain's Elements of Anatomy," and the various authors who have contributed to this work, especially Edward Albert Schaefer and George Dancer Thane.

"Stewart's Manual of Physiology."

Other works referred to are:

"Green's Pathology."

Wladimiroff, "On the Biology of the Tubercle Bacillus," Proceedings of the Sixth International Congress on Tuberculosis, Washington, D. C., 1908.

Metchnikoff's various works.

Vargas, "Tuberculosis of the Heart," Proceedings of the Sixth International Congress on Tuberculosis, Washington, D. C., 1908.

Schroeder and Cotton, Bulletin of Bureau of Animal Industry, 1908-1909.

M. J. Rosenau, "Milk and Its Relations to the Public Health," Hygienic Laboratory, Bulletin 56, March, 1909.

Other authors are mentioned in the text.

CONCLUDING NOTE.—In connection with the above I have to thank Dr. E. I. Fogel, of this city, for the receipt of an extremely interesting and important paper by Leonard Findlay, M. D., "Uber Den Ursprung Anthrakose der Lungen," in a collection of essays dedicated to Professor Heinrich Finkelstein, of Berlin, by his pupils and collaborators, May, 1911, in which the above views are earnestly combated, and especially Calmette's work on pulmonary anthracosis via the intestine, is directly controverted.

This only adds to the interest and fascination of the subject, and shows that the problem is still an open, debatable one, worthy of our most earnest endeavor and study.

A. O. Z.

"CLAMBAKE FOR FAMOUS TROTTER" is the title of an article which appeared in the New York *Herald* of August 21, and which speaks of the celebration of the 27th birthday of "Kingwood," a trotting horse, who, with his genial owner, Mr. George A. Coleman, were familiar sights on the New York Speedway a few years ago. Everyone in New York knows "George" Coleman, keeper for many years of the "Kingwood stables," named after his favorite horse, who has a mark of 2:17 $\frac{1}{4}$, but has trotted trial heats in 2:08 $\frac{1}{4}$. Mr. Coleman first owned "Kingwood" when he was six years old, but has sold and re-bought him three times, buying him the last time to insure him peace and plenty for the rest of his life. More than one hundred business men attended the clambake given in honor of the 27th birthday of the trotting horse, who, done up in ribbons, was an appreciative spectator, munching oats and idly switching flies with his graceful tail.

THE RELATION OF THE VETERINARY PRACTITIONER TO MUNICIPAL FOOD INSPECTION.*

BY GEO. H. GLOVER, FORT COLLINS, COLO.

A paper on sanitation might include many things. The subject is so broad that to do it justice in all departments would be like issuing one stupendous volume of "universal knowledge"; I have thought it better, therefore, to deal specifically with two or three phases of the subject rather than to generalize, in a necessarily superficial way, on the entire subject of sanitation as applicable to veterinary science.

Those of us who are in the latitude of the half century zone are fortunate indeed that we have been privileged to live so long, at a time cotemporaneous with the most marvelous progress in every department of human activity that the world has ever known. This period is especially conspicuous for the enlarged opportunities in education, for a more intimate acquaintance with the laws of nature, for a wider horizon, a greater optimism and we trust a more abiding faith.

Commensurate with the most conspicuous of notable achievements in the arts and sciences has been the evolution of the theories, facts and methods pertaining to the profession of veterinary medicine. The animal wealth has increased in this country many fold and this growth is marked, not by a numerical increase alone, but because of better breeds of animals, and has been fostered by a growing appreciation everywhere, that *animal industry is the major part of agriculture*.

The subject that I wish to present for your consideration today is centered around the proposition that relatively too much of the work and too large a share of the interest of the veterinarian is dedicated to conserving the 4,000,000,000 dollar live stock

* Read before the Missouri Valley Veterinary Association, at Omaha, Neb., July 2, 1912, as a part of the report of the Committee on Sanitation.

investment of this country at the expense of his duty, his privilege and his obligation as sanitarian and guardian of the public health.

The work of the veterinarian, briefly summarized, consists in conserving the animal wealth and guarding the public health. I feel that the profession is at fault in neglecting and no doubt underestimating its duty in the latter instance. True it is that we have taken an active interest in the relation of bovine tuberculosis to the human, but aside from this one disease we surely cannot be accused of over-zealousness. The intertransmissibility of tuberculosis, for example, has interested us as a scientific fact, but the actual participation in the prevention of such transmission has given some of us very little concern. I feel that we have been neglecting an important and remunerative field of usefulness and one that is fast being usurped by our medical confreres and too often occupied by laymen.

NEED FOR MUNICIPAL FOOD INSPECTION.

It seems almost superfluous to argue the need for municipal food inspection. It is surely destined to be an important factor in modern civilization. It is now in its incipency and while in many instances is in bad repute because of being in incompetent hands, it is certainly destined to be made more efficient in the large cities and to be extended ultimately to the small cities and even to the towns. The esthetic sense requires that the food we eat shall be clean and appetizing, and common sense demands that we get our money's worth, and that food purchased shall in the highest possible degree nourish and support life, and not endanger it, or by its bad quality contribute to all that goes to make life "not worth the living."

The many instances of meat poisoning, sausage poisoning, fish poisoning, of parasitic and bacterial diseases transmitted through the medium of food to the human, of serious outbreaks of typhoid fever, diphtheria, scarlet fever and other diseases transmitted through the medium of milk, together constitute an argument for efficient food supervision that cannot be denied.

The following prophetic statement is taken from the last

Year Book of the United States Department of Agriculture: "The greatest source of danger with regard to the meat supply of the country comes from the meat which is not subject to inspection. The Government inspection is applied only to such meats as are produced by persons or establishments doing interstate or export business and covers but a little more than half of the country's meat supply. The remainder must be looked after by state and municipal authorities, and it is gratifying that there is a general awakening to the need for local inspection. Inspection is already being carried on by many cities and a few states, and in others steps are being taken to establish an efficient inspection system."

The law which regulates the Federal inspection of meats is no broader in its scope than is that respecting the supervision of other foods. Much more than half of all food inspection must always, because of constitutional Federal restrictions in intrastate commerce and trade, be done by municipal and state authority, and because of inability to conserve the time and best efforts of inspectors, would require an inspection force, on meats alone, of probably ten or twenty times the number of men employed in the Government service in the same capacity.

Aside from consideration of export meats there is now a greater need for state and municipal inspection of meats than there is for Federal inspection, and this need is fast crystalizing into a demand. We are credibly informed that diseased and suspicious animals are not sent to abattoirs having Federal inspection, but on the contrary are sold to small establishments that have not inspection and where condemnations are almost unheard of. If suspicious animals are not turned back sometimes from these large establishments and find their way to slaughter houses where conditions are easier, it guarantees a standard of morals in this business that is far above the average of frail human nature.

I feel confident, then, that I am not far astray when I assume that, while there is Federal inspection of a little over half of all animals slaughtered for food, there is probably eighty per cent.

of diseased animals killed for food where competent inspection is now impossible.

In Colorado the municipal slaughter houses were in such a degraded and revolting condition that the office of State Meat and Slaughter Plant Inspector was created four years ago. The work of this office is limited to sanitary inspection of slaughter houses, markets and other places where meats are handled for local or intrastate trade.

THE VETERINARIAN AS MUNICIPAL FOOD INSPECTOR.

In many places where municipal food inspection has been inaugurated it is inefficient, not properly systematized, a mere pretense, and is in the hands of men who, to say the least, have a very meagre conception of what they are trying to do. It is a sad commentary upon the status of modern politics as well as upon the intelligence or integrity of many city officials, that spoils of office should determine the appointments to offices where human life is the price, rather than the consideration of scientific training, experience and aptitude for the work. Our lives are in the hands of our food inspectors and a knowledge of their unpreparedness to safeguard us, does not tend to whet our appetites nor encourage good digestion.

In Colorado the State Meat and Slaughter Plant Inspector is a layman and until the last thirty days all of the meat and dairy inspectors in Denver were laymen, and Fort Collins is now the only city in the state where the responsibility of food inspection, in any of its branches, is authoritatively in control of a veterinarian. This condition exists in face of the fact that the state is supporting an educational institution which trains men for this work and that it costs over \$1000 for every man that is graduated in veterinary medicine. Since the last election we have succeeded, by hard work, in placing a graduate veterinarian in the office of Chief Meat Inspector in Denver and two veterinarians as milk and dairy inspectors.

The appreciation of food inspection and the price the public will be willing to pay for it, is, after all, destined to be determined by the quality of service rendered. The veterinarian

is the only man qualified by training to render an efficient and appreciative service.

The reasons why these positions are not filled by veterinarians are: *First*. Such positions come under the head of what is known as "Political jobs" and veterinarians are too busy with their work to perfect themselves in the art of modern city politics. *Second*. The salaries paid are no inducement to a trained veterinarian. These positions are filled by non-professional men and the supply far exceeds the demand. The law of supply and demand is operative here, as elsewhere, and in this instance the supply is based upon the quantity of professional politicians who must be rewarded, because they have helped to elect the ticket, and not upon the quality of men as determined on the basis of training, experience and competitive examinations.

Everywhere the world is demanding service and while often distressingly slow, is in the end willing to pay for it. The public will not long be content with a proposition so absurd as having part of its food supply under a most efficient Federal inspection and the remainder without supervision or in the hands of men who, no matter how good their intentions may be, are incompetent to give the protection expected, as guardians of the public health.

FOOD INSPECTION IN SMALL CITIES AND TOWNS.

The need of food inspection, all things considered, is as great in small cities and towns as in large cities, but the problem of finance is more difficult and the present small appreciation of its importance renders the support of such a proposition almost impossible. Many cities with a population of from 5,000 to 10,000 have adopted, more or less, effective measures to insure a more sanitary milk supply, but have not extended the work to include the inspection of other foods.

The requirements in milk and dairy inspection throughout the country are far from being uniform, are often inadequate and sometimes impractical and absurd. In small cities the supervision of the milk supply is usually in the hands of the city

physician who gives it indifferent attention or has a layman as deputy, and neither of them is familiar with the diseases of dairy cows, and either have not the time or a knowledge of the subject that insures success.

I feel that there is ample reason to criticise the average dairy inspector because of his officiousness. The most wholesome attitude is that of mutual helpfulness and co-operation, of endeavoring to make the work essentially educational, and not a police supervision, with mandates that court the opposition rather than the co-operation of the dairyman. It is possible to produce a very superior quality of milk with a very meagre equipment if the dairyman knows how and has a disposition to try. To enthuse the dairyman with an ambition to make conditions and methods such that a superior quality of milk is possible, requires tact on the part of the inspector and offers the only hope of a lasting success.

The production of high grade milk means the active, constant and intelligent supervision of everything pertaining to the business, beginning with the breed of cows, the feeding, diseases of dairy cows, drawing the milk under sanitary conditions, refrigeration, separation, transportation and delivery. The sum total of little things is what counts in the final delivery of milk at the kitchen door. It is as futile to try to legislate a dirty person into cleanliness as it is a sinner into godliness. The only hope is to show him proper methods, encourage him for every effort and show him practical results from the laboratory and a greater demand for the superior product under improved conditions. Cleanliness for its own sake does not appeal to the average dairyman; he must be shown that it pays, and this the competent inspector can, and must do, if he is to get results.

As the honest physician gives much of his time and efforts to prevention of disease and public health problems, so is the veterinarian under the same moral obligation to do his share in the interest of the welfare of the community, for the common good. I must accuse my fellow workers as a whole of being derelict in this matter and manifesting a selfishness which is not praiseworthy. Unless a city is willing to volunteer a tempting

salary the veterinarian has in most instances shown his spleen by refusing to take any interest in the matter whatsoever.

THE TUBERCULOSIS PROBLEM.

As sanitarians, what is to be our attitude respecting tuberculosis? We have reached a crisis. We must go forward, but how? This is not only the greatest of disease problems, but it has a tremendous economic significance. I doubt if there are a dozen cities in the United States that has detected and removed every tuberculous cow from its milk supply. We are groping in the dark, making a spasmodic but ineffectual effort, here and there, and silently praying for a Moses to lead us out of the wilderness. Science has revealed many important facts and now it is for us to find ways and means of using them. We are eating the meat and drinking the milk of tuberculous animals; we are practically certain that children especially are contracting the disease from cattle; we have a means of detecting the presence of tuberculosis in animals; there is a financial loss of millions of dollars every year; we feel that we must do something, but we have no definite plan for united action. On the other hand, while there are millions of dollars invested in breeding and dairy animals, these animals, even though tuberculous, still represent in most cases some real value. Property rights must be respected and King Mammon has not been dethroned. The Bang system, with some modifications, it seems to me, is the best solution at this time. The American method of testing and slaughtering all reactors, if generally enforced, would bankrupt every state in the Union.

As an outline of a general policy respecting this disease in Colorado, I am willing to compromise on the following basis:

1. The compulsory testing of all breeding and dairy cattle.
2. Instead of slaughtering all reactors, isolate them and build up a healthy herd, according to the Bang system.
3. Allow the sale of milk from reacting cows, after pasteurization and proper labeling.
4. A general and efficient supervision of pasteurization of milk.

This plan if adopted would mark one step of progress and would have the co-operation of dairymen and breeders instead of their most determined opposition. The sale of pasteurized milk from tuberculous cows would be far better than using the raw milk from tuberculous cows, as is done at the present time.

Until we, who are presumed to be the highest authority, manifest sufficient faith and knowledge on this subject to crystallize a definite plan for concerted action, we cannot expect that our spasmodic experiments here and there will command a following that will mark any appreciable success. If we are to have any authority in the role of guardians of the public health, to take an active part in guarding the nation's food supply, it is necessary that we unite upon some plan for action.

A NEGLECTED OPPORTUNITY.

To summarize, I wish to say that the central thought in this paper is to urge upon the veterinary practitioner a serious consideration of the matter of taking a more active interest in food inspection, as an avocation, especially in small cities and towns.

I believe, as previously stated, that it is our moral duty to do this because we are the only men qualified by training in all branches of the work. It will help to extend our acquaintance and advertise our business as practicing veterinarians. If we are discreet and tactful it should make but few enemies, but many appreciative acquaintances and friends. We will have time to attend to all of the practice we are now doing, with very few exceptions, and will soon have the opportunity to do much more. Idle hours will be spent in going through the shops and markets, mixing with people, getting acquainted, showing a public spirit which augurs for an enlarged opportunity and a greater appreciation.

Now the question is,—as busy practitioners, can we afford to do this? I believe that we can, and not only do I believe that it is, in a sense, a duty of citizenship and of humanity, but that it will give us a much desired prestige in the community, extend our influence, afford the much needed opportunity to extend our practice and be altogether worth while. "Think on these things."

CRYPTORCHID CASTRATION.*

BY DR. A. B. McCAPES, BOULDER, COLO.

PREPARATION.

The success of an operation on a cryptorchid depends largely on the condition the animal is in when the operation is performed, and the dexterity of the operator; therefore considerable care should be exercised before attempting to operate. It must be remembered that the operation is an abdominal one, and abdominal operations in the horse are not to be considered lightly; furthermore there is no way to determine what conditions may present themselves when the operation is being performed. For instance, if the patient is a colt or young horse, one should determine by examination and by questioning the owner, whether or not the patient or any other colts or horses living with the patient has recently or at any other time been afflicted with strangles. If such an examination proves that strangles is present, the operation should be postponed. If the patient shows an unthrifty condition, determine if possible the cause of such condition, and if it is produced by some debilitating disease, postpone the operation until the patient is improved.

If it is apparent that such condition has been brought about by improper food and the patient shows a normal temperature and normal pulse, the operation may be performed with safety. This is especially true of colts running in the pasture and of old horses at work.

Patients that have been kept confined in the stable, especially when the surroundings are filthy (as is often the case), should not be operated upon until they have had a few days of exercise, the stable thoroughly cleaned of all faecal matter and of all stable refuse of any character. The patient should be thoroughly

* Presented at the semi-annual meeting of the Colorado Veterinary Medical Association; Ft. Collins, Col., May 31 and June 1, 1912.

cleaned of any fœcal matter adhering to the body and before being returned to the stable should have his stall well bedded with clean straw or hay. It is necessary to take these precautions to prevent the possibility of infection, either at the time of operation or immediately afterwards.

Some operators advise having the patient off feed several hours before the operation with the view of making the operation easier to perform. Long experience has proven to me that this is a serious mistake; instead of making the operation easier, it will many times make a more difficult case out of one which would have been easy had the horse been in a normal condition, as relating to the amount of food and fœcal matter in the bowels. When the bowels are full they hold normally (except in rare cases) the testicles against the abdominal wall at a point near the internal abdominal ring, so that they may easily be found by the operator. When the bowels are empty this pressure is removed and the testicles may float from their original position to such an extent that it will be difficult and in some cases impossible to find them without a radical operation.

ABNORMAL CONDITIONS.

While cryptorchids must be considered as abnormal under all conditions, I wish to speak of three conditions which I am justified in considering especially so, since they occur in only about two per cent. of the cases:

1. We find cystic tumors of varying sizes in connection with the testicle or spermatic cord.
2. An indurated and hardened condition which causes the testicle to become from twice to at least six times the original size.
3. (See specimen) Since these conditions can never be determined by the operator until he has located the spermatic cord and testicle, it is necessary that he should always have them in mind when operating.

When difficulty is experienced in securing the testicle from the abdominal cavity, he should examine thoroughly and de-

termine why. This can be done most effectively by grasping the spermatic cord, already out, with one hand and passing the forefinger of the other hand into the opening, when he can feel the testicle and determine why it does not come through the opening. If the operator finds a cystic tumor of sufficient size as not to allow the passage through the opening without danger of making it so large that hernia will result, he may do one of two things, either tap the tumor with a trocar and draw off the fluid, or have an assistant pass the hand through the rectum and by gentle pressure against the tumor force the fluids gradually through the opening. When the operator finds either of the other two conditions, he must, by careful manipulation, remove the testicle through the opening at the same time using great care to prevent tearing a larger opening than is necessary to admit of its passage. This can best be done (as in the former case) by an assistant pressing the testicle against the opening. The operator should at all times have a firm hold on the cord and with the fingers of the other hand press the edges of the opening around the testicle. When removed if the opening is considered too large, the edges of the skin should be stitched together and remain so until some swelling has taken place, when the stitches should be removed. The animal should be watched for a few hours after he has regained his feet, and if the intestines protrude through the internal opening, they will show their presence by an enlargement at that point, and possibly by pain exhibited by the patient. If this condition presents itself the hernia can easily be reduced by the pressure of the hand over the enlargement.

TECHNIQUE.

Cryptorchids may properly be placed in two classes, namely: perfect and imperfect. Those cases in which the testicle and the cord are both retained in the abdomen are known as perfect cryptorchids; those in which the testicle alone is retained in the abdominal cavity, the cord being looped into or through the inguinal canal, are known as imperfect cryptorchids. Those cases known as flankers, in which the cord and testicle have descended,

but are retained close to the external ring, cannot in any sense be termed cryptorchids.

Owing to the site of this operation it is necessary to use a throwing harness, which may be tied in such a manner as to flex the hind limbs as much as possible without injury to the horse.

OPERATION.

The animal now being in a suitable position, the operator should have at hand two dishes in which antiseptic fluids are contained; in one of them should be his knife and whatever instruments are to be used in severing the testicle; I prefer the ecraseur for this reason: In a number of cases the cord will be short and some difficulty will be experienced in getting it down where the emasculator might be used, while the ecraseur may be placed over it even if it is covered by the skin and tissues. The antiseptic contained in the other dish is to be used in washing the parts around where the incision is to be made. These parts should be thoroughly cleansed, using a carbolated soap in conjunction with the antiseptic. The finger nails should be cleansed of all dirt and the hands thoroughly cleaned and dipped into the liquid contained in the instrument dish or into a new solution made in another.

After the parts have been prepared as stated and the proper side determined, make an incision through the skin about four inches long, parallel with the vein, and about four inches above the median line, then break down through the cellular tissue, going backwards and slightly upwards until you have broken down sufficient tissue to place your hand underneath the skin. Some care should be exercised in breaking down the tissue in order not to injure the vein, under which the hand must be placed when inserted into the opening. After the hand is placed under the skin the fingers should all be closed on the palm of the hand except the *fore finger*. With this finger the operator should continue to break down the connecting tissue between the abdominal muscle and the thigh until the finger has reached the internal abdominal ring; this point will be known by the slight depression

appearing under the finger. It must be remembered that the internal abdominal ring is rudimentary in the cryptorchid, especially in those cases where the spermatic cord and the testicle are both retained in the abdominal cavity. In those cases where the spermatic cord has descended through the inguinal canal the ring is more developed and sometimes complete. The operator must not attempt to break through at this point, but must pass the fingers backwards and downwards to a point about one inch from the ring or depression, then by doubling the fingers at an angle of about forty-five degrees, thus bringing the point of the finger nail in contact with the aponeurosis of the obliquos and externus muscle; by a few short movements sidewise the fingers will pierce the aponeurosis and enter the abdominal cavity. Occasionally when the finger passes through the aponeurosis it does not pierce the peritoneum, but the latter seems to float or push ahead of the finger; in this event some trouble is experienced in piercing the peritoneum, and nothing can be done in the way of locating the spermatic cord until your finger has pierced the peritoneum. Usually the better way to do this is to grasp a fold of peritoneum with the end of the finger, gently pulling it through the opening in the aponeurosis; this usually tears a hole which the operator can easily find and he is then ready to locate the spermatic cord. This is best done by moving the finger around the opening very slowly, keeping the palm of the finger pressed against the peritoneum. By the sense of feeling the operator will know when the finger has touched any part of the cord. If the finger comes in contact with the spermatic artery it will be known by its peculiar doubled condition. On the other hand, if the finger comes in contact with the vas deferens it will be known by its smooth feeling and dense cordy condition. When either of these structures are touched, move the finger away from the abdominal wall sufficiently to grasp the structure and press it against the abdominal wall, where it may be felt more plainly and its true character more definitely determined. When satisfied that you have found any part of the spermatic cord, draw it through the opening and by careful manipulation of the fingers

of the other hand, inserted under the skin and cord just brought out, you will be able to secure the testicle through a very small opening. It is essential that the opening be small, as a large opening might result in hernia. This method of locating the spermatic cord will be successful in a large majority of cases; however, there are a few cases in which the cord is not so easily located. In these cases the operator must explore deeper into the pubic region. This must be done with care and under no condition must the operator insert the whole hand unless he cares to make the operation a radical one, which is seldom advisable. If the cord cannot be found with one finger, it will seldom, if ever, be found by inserting the whole hand. In a great many cases if the operator will work very slowly with the finger he will be surprised to find the cord located at some point which he has just explored; this is probably due to the fact that the bowels have moved the cord or testicle from some remote part to a point within reach of the operator. If, after a few moments' exploration as described, the operator fails to locate the cord, the hand may be removed and the horse rolled over and back again. This movement will sometimes assist in bringing the cord to the point at which the opening has been made. It may then be easily found by again inserting the finger.

IMPERFECT CRYPTORCHIDS.

Imperfect cryptorchids are those cases in which the spermatic cord has descended through the inguinal canal, the testicle being retained in the abdominal cavity. This condition cannot always be determined before the incision is made. When, therefore, the incision through the skin has been made and the connective tissues broken down, one should examine carefully to make sure whether or not this condition is present; if so, the following method should be followed: Grasp the loop part of the spermatic cord with the right hand (if the testicle is on the right side) and pass the left hand into the opening and with the left forefinger make the opening through Poupart's ligament, and at the same point as in operating on a perfect cryptorchid. When the finger

has entered the abdominal cavity, pass the finger upwards to the internal ring, grasp the spermatic cord and draw it through the opening thus made. If the operation is for the left testicle the operator should grasp the spermatic cord with the left hand and use the right hand to make the entrance into the abdominal cavity.

Under no circumstances should the operator attempt to pull the testicle through the inguinal canal, for in a majority of cases it cannot be done and if attempted will result in hernia.

AFTER TREATMENT.

There is considerable difference in opinion among operators as to the after treatment. Some advise packing the incision with gauze, others maintain that the animal should have exercise for several miles every day, while a few insist that it should be put to regular work. I am obliged to differ very materially with these operators as to the advisability of packing the wound and of exercising the animal.

I object to the packing because it is unnecessary. When the packing is removed it leaves an open wound which is apt to become infected by pus, producing germs as well as others of a dangerous character. I am not in favor of exercising for the first twenty-four hours, because exercise will prevent any adhesion taking place in the inner wound. If we can get healing by first intention we have accomplished the desired result, and eliminated some chance of infection. If the animal is exercised immediately following the operation there is considerable probability of air entering the abdominal cavity and may result in infection and enteritis. Therefore I advise placing the animal in a clean stable with plenty of clean, dry bedding, for at least twenty-four hours. At the end of this time he may be turned out into a clean corral, or better, into a pasture and allowed to exercise at will.

REPORT OF CASES.

Out of the first nine hundred cases, the following have ended fatally:

1. 1 two-year-old, peritonitis.
2. 1 six-year-old, left testicle up; considerable trouble experienced in locating it; it was finally found and removed; horse was placed in stall and was found in an hour cast, with intestines out and was killed.
3. 1 bay horse, about five years old; there was no evidence of the testicle having been removed. Operation commenced on the left side and continued on right; after thorough exploration no testicles were found; the cause is unknown. The horse died in about a week, presumably from peritonitis.
4. 1 colt, two years old, died from septic poisoning.
5. 1 colt, three years old, died from hemorrhage from normal testicle. Hemorrhage took place about an hour after the operation and continued for ten hours, when death ensued.
6. 1 horse, seven years old, of mean disposition; had not been out of the barn for months; the horse had scars on both sides, but no remnant cord was to be found on either side; both sides operated on without success; horse died in a few days; cause unknown.
7. 1 horse two years old; the operation was easy; the colt found dead in the pasture at the end of first week; cause unknown.
8. 1 horse, two years old; operation easy; wounds were healed; died from tetanus at the end of two weeks.

In one hundred and ten (110) cases the left testicle was found in the abdominal cavity in sixty (60), right testicle in forty-two (42) and both testicles in eight (8).

SECRETARY C. A. CARY writes: "A joint meeting of the Alabama and Georgia Veterinary Medical Associations will be held at Auburn, Ala., in the Veterinary College of the Alabama Polytechnic Institute, August 2 and 3. This meeting will be one of the best ever held by the two associations and it is hoped that it will arouse sufficient interest to get all graduate veterinarians in Alabama and Georgia into their respective state associations."

THERAPEUTICS.*

BY DR. H. D. BERGMAN, AMES, IA.

As an introductory subject, I shall first consider, and endeavor to answer, the oft-repeated and well taken question of the practitioner, as to why drugs fluctuate in price from year to year, why certain drugs in common use have doubled, trebled, and quadrupled in price in the past year, and also endeavor to show how an extremely popular drug may lose its popularity with the profession, figuratively speaking, over night. There is no one causative factor for the increase in price of drugs. One of the principal reasons, however, is the necessity of their coming up to pharmacopeal standards at the present time, and, while we are paying a larger price, we are getting a purer product and not one containing from 5 to 25 per cent. of some foreign inactive substance. Again, the increased demand has to do with the increase in price. At the present time, people do not treat their own ailments and those of their animals with simple home remedies as in the past, but there are more physicians and veterinarians employed, and hence an increased demand for medicinal agents, and we all know that demand regulates price of any commercial product. Fluctuations in price depend largely, also, on the success or failure of the crop from which certain drugs are derived. For instance, the flax crop last year was a failure, and I think you all know something in regard to the price of linseed oil at present. Two or three years ago santoin was worth in the neighborhood of \$4 per pound. Today it is worth \$17, due, the wholesalers say, to crop shortage, and we are glad to note also that they claim the rise in price is only temporary. In the case of opium, the Chinese government will now only allow a certain amount to be produced, owing to the great increase of the opium smoking habit among her population. The other countries have also put

* Committee Report, Iowa Veterinary Association, Cedar Rapids, November, 1911.

a ban upon its importation except for certain medicinal purposes, hence, of course, the price goes up. The Japanese control the production of camphor, and only allow so much to be produced, hence increase in price. Lastly, and though it may seem peculiar, it is due to our exact knowledge of the composition and medicinal value of drugs (thanks to our eminent botanists, pharmacologists, chemists, etc.) that has increased the price, for their researches have resulted in an enormous number of worthless drugs being thrown aside, and, although we get a corresponding increase in price of the remaining drugs, yet we know exactly what we are using, and their various medicinal properties from a therapeutic standpoint. An example of how suddenly a drug may drop in popularity may be cited in our old friend echinacea, which, a few years ago, was widely used, and indeed is used a great deal still. But when the Council of Pharmacy and Chemistry of the American Medical Association made a complete study of echinacea from all standpoints, and the eminent Henry Kraemer, editor of the *American Journal of Pharmacy*, came out last July with the report that echinacea had been investigated thoroughly and had been deemed worthless and unworthy of further consideration as a medicinal agent until more reliable evidence had been presented in its favor, the profession in general dropped its use, and the sales of echinacea decreased enormously.

Observations and results derived with a few of the new and some of our older drugs:

Pyoktanin Blue.—Pyoktanin, which has been used successfully for some time in human medicine, has now won a place in veterinary medicine. As an antiseptic, disinfectant, and analgesic, it is extremely valuable. Excellent results have been reported from its use in surgery, disease of the throat and nose, wounds, malignant neoplasms, and in diseases of the eye. It is recommended as having a specific healing effect in foot and mouth disease. Pyoktanin is in the form of a powder and is used from 1-1000 to 1-5000 solution. It is said to be active in one to thirty thousand solution. The powder is worth about \$1.50 per ounce.

The Sulphocarbolates or Phenosulphonates.—Both sodium

and zinc sulpho carbolate have stood the test, and demonstrated their value as intestinal antiseptics and tonics internally, and as astringents and stimulants to foul ulcers and slowly granulating surfaces externally. We have been getting excellent results at the college hospital by the use of zinc sulphocarbolate applied as a dusting powder to slowly granulating surfaces, especially in summer sores.

Balsam of Peru.—While speaking of stimulants and antiseptic dressings for foul wounds and slowly granulating ulcers, I would like to mention balsam of Peru applied undiluted, with which I have observed good results.

Iodoform.—The use of iodoform in chronic metritis or pyometra with purulent discharge has been tested quite thoroughly of late with favorable results. The iodoform with boric acid, two to four drams of each, is placed in a capsule, and inserted into the uterus following the use of whatever antiseptic injection is being used. A capsule is not necessary every day, but every third or fourth day, and gradually diminishing to one a week or ten days.

Petrox Iodine.—Petrox iodine is a new substitute for tincture of iodine for external application where the absorption of the iodine is desired as in actinomycosis, etc. Petrox is a saponified oleaginous vehicle for the external application of iodine. The iodine may be incorporated in the petrox in whatever per cent. is desired. It has this advantage over the tincture of iodine, in that, when the tincture is applied, the alcohol at once volatilized, leaving only the dry iodine on the surface, which is not absorbed thoroughly, as it is in petrox iodine, where the iodine remains incorporated in the oily vehicle and is slowly and surely absorbed.

Stovaine.—We have been using stovaine as a local anesthetic at the college hospital for some time. It seems to possess all the qualities of cocaine, and has the advantage of not producing the nervous excitement that cocaine is likely to, when a large area is being anesthetized. We usually use one to two drams of a 5 per cent. solution according to the area of operation. Minor operations may be rendered almost bloodless by the injection of a

dram or so of adrenalin chloride at the same time that the local anesthetic is injected.

Nuclein.—The action of nuclein in producing a hyper leucocytosis and thereby giving a favorable action in inflammations, such as peritonitis, puerperal infections, etc., seems to be questioned. From what reports I have been able to get, and also from a personal standpoint, the general opinion seems to be that the value of nuclein has been somewhat overestimated.

Autogenic and Polyvalent Bacterins.—A comparison of the results with the use of bacterins seems to show that from a comparative standpoint the advantage lies with those prepared from the culture made from the discharges of the animal to be treated, namely, the autogenic bacterins. This is only natural, however, as we are certain that they contain the invading micro-organism.

Bismuth Paste.—The use of bismuth paste in the treatment of fistulous tracts and abscess cavities seems to be quite successful, and is growing in popularity with a number of veterinarians. The theory of its action aside from its antiseptic and astringent properties seems to be that the solid substance in the fistulous tract sort of displaces secretions by its own weight, and also acts as a frame-work for the formation of healthy granulations. After carefully drying the cavity with gauze, the paste is heated and injected with a syringe. The opening is then closed with gauze and the paste allowed to harden. The external opening usually heals in a few days, and the paste is absorbed, and the sinus obliterated by connective tissue.

Camphor.—I do not believe that the real value of camphor as a therapeutic agent is appreciated by the profession in general. All the great German therapeutists speak very highly of the value of this drug. Therapeutic doses of camphor stimulate the entire nervous system, especially the brain. It is also a heart stimulant, increasing blood pressure, as is evidenced by the color of the visible mucous membrane after its administration. Camphor is an antidote for any poisonous product which depresses the cerebro-spinal centers and the heart. It has also a marked antipyretic action and will even lower bodily temperature in

healthy animals. The German authors claim camphor to be specific in septic fevers, such as septicemia and pyemia, and personally I have observed excellent results following the use of camphor in these conditions. It may be used in these cases either internally or subcutaneously. As high as 100 to 250 c.c. of the spirits or oil of camphor may be administered subcutaneously in 24 hours.

Frohener recommends oil or spirits of camphor subcutaneously in contagious pleuro-pneumonia in doses of 50-150 c.c. Externally, camphor is valuable in treating mastitis, tendo-vaginitis, slowly granulating wounds, ulcers, fistulas, etc. In phlegmon spirits of camphor may be administered to horses in a bolus and subcutaneously as the spirits or oil of camphor.

In concluding my report, I wish to say that I firmly believe that success in therapeutic lines depends primarily upon accuracy of diagnosis. After diagnosis comes treatment, and the choice of medicinal agents is by no means simple, for here probably hangs the professional success of the practitioner. Lastly, the most reliable medicinal agents that the market affords are none too good for veterinary practice. For through the use of unstandardized preparations, or preparations of indefinite potency otherwise skillful treatment often fails.

CARRIES JOY AND GOOD CHEER TO THE MOUNTAIN TOPS: A subscriber up at Pike's Peak, Colo., in renewing his subscription, writes thus to the REVIEW: "Enclosed find check, etc., so that you can afford to come to the Pike's Peak region for another year, and believe me, it would be impossible for the writer to exist without you."

"ALL VETERINARY ASSOCIATIONS SHOULD ESTABLISH LECTURE BUREAUS," declared President Smith, of the V. M. A. of N. J., at the recent meeting of that association in Jersey City. This happy suggestion as a means of assisting the popular education movement under discussion at the moment, seemed to burst spontaneously from the lips of the presiding officer, and if generally accepted and acted upon will surely bear fruit.

TUMORS ENCOUNTERED IN VETERINARY PRACTICE.*

BY H. E. BEMIS, AMES, IOWA.

It is the intent of this paper to deal chiefly with the clinical aspect of the true tumors occurring in larger animals. This excludes tumor-like growths of inflammatory origin, such as granulomata, exostoses, etc. Tumors are of frequent occurrence in animals in this section of the country. Out of a clinic of twenty-seven hundred and fifty-nine surgical diseases, some form of true tumor constituted 27 per cent. of the cases. About one-fifth of this number were of the malignant variety.

Clinically we must distinguish between malignant and benign tumors. Malignancy is worked by rapidity of growth, the involvement of surrounding tissues, the tendency towards destructive degenerations, and the formation of metastases in distant parts of the body. Epitheliomas, sarcomas, and carcinomas constitute the malignant tumors.

Benign tumors are slower in growth, more regular in outline, remain more or less isolated from surrounding tissue, and are not apt to recur after removal.

Tumors as a class must be differentiated from other conditions causing enlargements in various parts of the body, notably hematomata, abscesses and hernias. Hematomata are recognized by their rapid development, smooth outline and freedom of overlying parts. Abscesses are marked by the presence of heat and pain, the characteristic heavy abscess wall around the periphery which may show fluctuation at various points. Hernias are usually reducible, in which case the diagnosis is easy. If strangulated so as to simulate a tumor in hardness, there will be general disturbance noticed.

Since we have several varieties of malignant tumors and still

* Presented to the Iowa Veterinary Association, Cedar Rapids, November, 1911.

more of the benign variety which differ markedly in respect to prognosis and treatment, it is of prime importance to be able to distinguish one form of tumor from another. Laboratory diagnosis is available only to those who are equipped and that only after operative removal of all or a part of the tumor has taken place.

In making a clinical diagnosis there are various valuable guides. First of all the location of the tumor is important. The eye, the penis and the mammary glands are most frequently affected with carcinomata, sarcomata and adenomata. From the above mentioned, eight of the tumors affected the eye, and of these four were carcinomas, and two sarcomas. The bones are most frequently affected with osteomata or sarcomata. In our experience all of the tumors affecting the bone have been osteomata. One appeared as smooth, rounded, the size of a goose egg outgrowth from the lower mandible, covered by the mucous membrane beneath the tongue. They commonly appear as pedunculated tumors from the lower border of the mandible. The skin and the mucous membrane of the nostril is the most common location for papillomata. Our clinic shows that fully half of all tumors encountered are of this variety. Occurring upon the skin, they may be found in most any region of the body. They may appear either as the organic greyish warts or verruca so common in calves, or as the soft vascular, cauliflower-like growths so commonly found in the skin of colts.

The papiloma of the mucous membrane appears as a spreading tumor from the mucous membrane of the usual passages, especially in young animals. They are flat upon the surface and elongated in the direction of the head. Their attachment is usually small and osseous in nature. Out of seventy-four tumors two have been of this variety. Both occurred in two-year-old colts. The subcutis is a common seat for the fibroma, lipoma and melanosarcoma.

Again the size and rapidity of development are also important in making a differential diagnosis. Malignant tumors, especially sarcomata, are very rapid in growth; fibromata and lipomata

may become of great size, involving a whole region, while sarcomata and carcinomata are the most apt to develop by metastasis.

Third, the surface of the tumor is a further aid, it being rough, nodular, exposed and strawberry like in carcinomata and papillomata. Tipomata are lobulated, fluctuating, and may be pedunculated.

Fourth, the relation of the tumor to the surrounding tissues is of importance. Malignant tumors involve the overlying skin, bending it down to their irregular surface, or the tissues may become involved in degenerative changes. In some cases the species of animal and the color are valuable aids in making a diagnosis. Carcinomata are known to be more common in dogs and melano sarcomata in grey horses. Young animals are more apt to present tumors of the connective tissue types, such as sarcoma, osteoma and fibroma, while old animals more frequently develop epithelial tumors as carcinoma. Referring again to the clinic record the epithelial tumors have been represented by four carcinomas of the eye, one of the maxillary sinuses and two of the penis, all in mature animals, while papillomas, which are mixed tumors, osteomas, sarcomas and lipomas, have almost invariably appeared in animals up to five years of age. Swelling of the neighboring lymphatics indicates malignancy. To illustrate how these factors may be used in making a diagnosis, if one should find a rough nodular tumor or rapid growth upon some structure of the eye of an old horse with possible involvement of the subparotid lymphatics, a diagnosis of malignant tumor, probably carcinoma could safely be made. If he should find a tumor of similar appearance upon the skin of a young animal it would in all probability be a papilloma. The prognosis of tumors depends upon the nature of the tumor, and its extent and situation. Single benign tumors so situated that total extirpation is possible, usually yield readily to that treatment. In case of malignant tumors the success of the treatment depends quite largely upon early complete extirpation before its surrounding tissues become involved or metastasis established. In general, if the surround-

ing tissues are not involved, if there is no swelling of the lymph glands or if the part affected can be completely amputated without interfering with the tumor tissue, the prognosis of malignant tumors is favorable enough to warrant operation.

In our experience treatment of two carcinomas of the eye and one of the penis of the horse have resulted in complete recovery. In these cases total extirpation and amputation were practised. Treatment of a like number of carcinomas in the same regions resulted in rendering the animals useful for a year or more when in one case metastasis resulted without the original tumor recurring, while in the other two the tumor recurred, accompanied by metastasis and involvement of surrounding tissue when further operation became impossible, but even in these cases we considered the first operation justifiable as an otherwise useless animal was rendered useful for from one to three years. Tumors involving some structure of eye, or in the nasal passages or sinuses, are the most difficult to operate upon. For operations about the eye where extirpation of the eye itself was not necessary, we have found a small, sharp, hooked instrument very valuable. Guided by the finger, this can be carried to parts which cannot be exposed. Operating just clear of the tumor tissue it can be taken away entirely. Operations upon the nasal passages or sinuses should be preceded by tracheotomy, then the cavities should be liberally trephined, giving plenty of room for a thorough rapid operation upon the tumor. Following operation upon skin surfaces the actual cautery may be used to destroy any remaining particles of tumor tissue and to produce an eschar under which the tissues heal. Operative areas in mucous membranes may be penciled with silver nitrate or irrigated with a solution of silver nitrate 1-200.

“BIOLOGICAL PRODUCTS (VETERINARY)” is the title of an excellent article by Dr. Robert H. Wilson of the Research Laboratory of Parke, Davis & Co., Detroit, Mich., which will appear in our September number.

CLINICAL SYMPTOMS OF DOURINE.*

BY DR. A. H. QUIN, CRESTON, IA.

The object of this paper is to present the symptoms of dourine, as I found them in the field, and not to pose as an authority or bring forth anything that is new. My only aim and hope is to make the symptoms plain to you, that you may recognize a case, should you meet it in your practice.

I believe the symptoms may be presented to you in few words; It is generally considered that dourine is an infectious disease and, under natural conditions, is transmitted only by breeding, and is due to the *Trypanasoma Equipurdum*. Let us divide and describe the symptoms as: acute, subacute, and chronic. Of these, I believe the only cases you may hope to detect without a history are the acute and the chronic.

My first experience with this disease was in the spring of the present year, when I received a notice from Dr. Gibson to go to Taylor county and examine a stallion, reported by the township trustees as suffering from some venereal disease, which I diagnosed as dourine and which diagnosis was approved by Dr. Bauman in consultation and further approved by federal officers.

In this case the penis protruded and hung pendulent. It was swollen for probably four inches and a number of vesicles were presented near the glands. He had a number of well-marked plaques on the right side of his body that you could not help but detect. Here let me say the plaque is the symptom. When you see a plaque, rest assured you have a case of dourine, and I believe you are not sure of a case unless they *are* present, unless you have a history of infection.

I may add a little advice to the younger practitioners. When you are called to see a stallion suffering from venereal disease, always get as much history as possible.

* Read before the Iowa Veterinary Association, Cedar Rapids, November, 1911.

Go see some of the mares that have been served by the horse, before determining your diagnosis. This horse will answer for a typical acute case in a stallion.

In the mare the mucous membrane of the vagina will be inflamed and congested with probably an ulcer, although the ulcer has been almost entirely lacking in the outbreak. I think we have only found one mare that showed an ulcer in the acute stage of the disease.

This mare, known as the Cowell mare, was bred to the stallion Trotteur and afterward to the stallion Mack, who became infected from the service, affording us the opportunity of observing early symptoms of the disease. When I first noticed anything wrong with him, he would raise one hind leg and then the other and appear a little sore. Owner stated he had trimmed his feet too close. The next symptom was a slight œdema of the testicle and sheath and in a short time well marked plaques; then we knew we had him. This horse showed nicely on P. M.

The chronic form of the disease is easily detected when you have a history of infection. If there is no history, you may be kept guessing.

Perhaps an owner will call you and say the mare eats well, but was running down in flesh all the time. She is windy, tucked up in the flanks, and when taken out of the barn, knuckles over on the pasterns, appears lame in the stifle, acts very much like a mare that has made a poor recovery from azoturia. There may be some depigmentation about the vulva or udder. This symptom has been almost entirely lacking in our cases.

The subacute form is the stage which seems to give the most trouble. The mare will apparently be in good health. Owner claims she does not work well and he has noticed nothing wrong; but on examination you often find an increased amount of mucous in the vagina. In a great many cases it will have a yellowish cast and the walls of the vagina will be stained a copper color. This yellowish tinge I consider very diagnostic, as on P. M. we have found this yellow sediment in the bladder in almost every case. I have in mind a mare known as the Lydden mare; she

showed scarcely any other symptoms. The mare was old and had a jack on each hind leg; was in good condition. Owner said the mare had spells when she would fall off. When destroyed her womb showed as much or more than any. Ovaries had been ulcerated and contained calcareous deposits. Again, you may find a mare that is doing her work well, will trot limber, show nothing, except upper lip drawn to one side or lower lip may hang pendulous. Mares of this kind and exposed mares showing nothing are the dangerous ones and probably would infect a stallion.

The power of tolerance seems to vary greatly in mares. We can sum up the story in a very few words.

You must either have the plaques or a history of infection.

As I have before stated, the chronic form of dourine in the stallion is little different from the mare, with the exception of the œdema of the testicles and sheath and the later atrophy of the testicles.

As to the manner of control and eradication, we are following the rules settled by a conference of the state veterinarian with federal officers.

We first quarantine the stallion, get the stud book, and quarantine all mares, and would ask each owner the question: "Have you bred this mare to other stallions?" If such was the case, we quarantine the others, also all mares bred after this service. Then we examine all stallions in the infected district and check over their books. All mares known to have the disease have been purchased by the government and destroyed.

THE article on *Tuberculo-Infection of Man Through Animals and Animal Products*, on page 545 of this issue, by A. O. Zwick, Ph. G., M. D., merits careful reading. The author has given much time to the study of tuberculosis in man and in animals both at home and abroad. During the last international congress on tuberculosis he acted as interpreter for the immortal Koch.

FOOT AND MOUTH DISEASE.

BY J. E. AGHION, V.S., VETERINARIAN STATE DOMAINS, SAKHA, EGYPT.

In presenting to your readers this short paper on foot and mouth disease, I do not profess to offer anything new, either on the pathology of the disease or its treatment. My object being to clear up a point which was on my mind for some time, and consequently may profitably ask, Why is foot and mouth disease so fatal in many countries in Central Europe, Asia, America and not at all in this country (Egypt), while the pathology, etiology and probably the period of incubation are the same?

Is it the climatic condition of the country that favors our cattle with the benign form of the disease or has idiosyncrasy anything to do with it?

Whatever the cause may be: I will just mention here that my personal experience leads me to believe that the Egyptian cattle, either through climatic condition, atmospheric influence or idiosyncrasy do enjoy the benign form of the disease. Now to elucidate this point I will try to describe the disease in a general way as seen here by the writer and others who had the occasion of observing it in many outbreaks.

Foot and mouth disease is also known by many other names which are no doubt familiar to all. It is a highly contagious and infectious fever of an acute specific nature, characterized by a vesicular eruption affecting the lips, tongue, roof of the mouth, around the coronets of the feet and between the toes.

The disease affects cattle, sheep, pigs, etc., and, according to some observers, it also attacks horses, mules, dogs, poultry and even human beings are susceptible to it.

On this point allow me to direct the attention of the readers to the fact that contrary to this statement, which may carry a good authority, I may say that I have never seen the disease to attack

horses, mules, nor dogs and though these animals were seen in direct contact with cattle affected with foot and mouth disease.

In order to decide and make sure of this point an experiment was carried out in the following manner:

Two horses, two mules, three native dogs and four head of cattle were subjected to a direct inoculation of the virus; the buccal mucous membrane and gums were scarified with a bistoury, and a bit of cotton saturated with the saliva and liquid serous of pustules of the infected cattle was rubbed vigorously to the parts; these animals were kept separately in an isolated pasture and daily inspected. None responded to the test, except the (four) cattle, which gave a positive reaction, one in forty-eight hours and the other three in five days, from the day the inoculation was applied. One of the dogs showed a slight uneasiness the second day from the inoculation (was dull and refused food), but got well soon afterwards. Now from the result of the above experiment, besides the observation of many others, one may feel confident in concluding that horses, mules and dogs are not susceptible to foot and mouth disease (at least in this country).

The period of incubation varies from thirty-six hours to four days and even more. Animals do not become immune after once having the disease. *The leading symptoms* are: The rise in the temperature, dryness of the muzzle, and an eruption appearing inside the lips, on the roof of the mouth and tongue. The eruption soon breaks, giving rise to ulcers and blisters. While this process is going on the mouth becomes sore and the animal shows difficulty in taking food, and mastication may then cease. Small blisters also make their appearance in the interdigital space and coronets of the feet, causing great pain and severe lameness; in bad cases separation of the hoof takes place; this is specially true in wet and cold weather. Animals in this condition take a long time to recover. In dry weather, the ulcers on the feet rarely occur.

The Treatment.—Ordinary cases of foot and mouth disease require very little medical treatment; it is a disease that runs a definite course and generally terminates favorably. Nursing is

practically all that is required. The first and by all means the most important step to be taken is to place the animal in a dry, well-ventilated stable or shed; plenty of pure cold water should be allowed; if temperature is high a dose of potassium nitrate should be dissolved in the drinking water; this may act as a febrifuge, and at the same time as a splendid mouth wash, soothing the aphthous eruptions and ulcerations in the mouth. The food should be soft and easy to masticate; green food is highly recommended. When suppuration with separation of some part of the hoof takes place the detached parts should be gently removed and the ulcers washed with a mild astringent or antiseptic solution and carefully dressed with some tow. The following powder was also tried with a fair amount of success.

Take of each cup. sulph. and pulv. charcoal, one ounce; chin-sol, two drams.

Under this simple treatment the fever subsides, the ulcers heal up nicely and the animal recovers and even may be put to work in fifteen or twenty days' time.

PRESIDENT BERNS, of the Veterinary Medical Association of New York City, appointed as delegates to the American Veterinary Medical Association at Indianapolis, Drs. E. B. Ackerman, D. W. Cochran and R. S. MacKellar.

HORSES IN THE TROPICS.—According to the observations of Lieutenant Colonel Charles E. Woodruff, chief surgeon of the western division of the army, gray and white horses live much longer in the tropics than darker colored horses. Almost the only ones that survive ordinary ailments in Manila are said to be white, gray, roan and light yellow. Among these the white horses predominate. Of one hundred Chinese mules bought for the Philippine constabulary in 1903 only four lived more than seven years, and these had milk white hair and jet black skin. Only mules of such a kind will be bought in future. Colonel Woodruff says: "There is some unknown relation between color and nervousness. On review, the gray troop horse is actually phlegmatic, the sorrel quiet and the bays excitable and restless. Although like all colors, black horses are sometimes quiet, they are believed to be the most excitable of all."—(*Youth's Companion* and *New York Tribune*.)

REPORTS OF CASES.

HERNIA.*

By DR. D. P. MALCOM, New Hampton, Ia.

In bringing this division of surgery before this meeting, it is not with the idea of enumerating the different kinds of hernias that may be found in the various domesticated animals, much less the various ways of operating. I will, therefore, confine my remarks to umbilical, inguinal and scrotal hernia, including the ways I operate.

Umbilical hernia is congenital or acquired and is seen either at birth or very soon after, rarely happening in adult life. The tumor formed in this region is occasionally very large and is of semi-globular shape, soft and elastic to the touch. It consists of a sack, the wall of which is composed of skin and parietal peritoneum which contains a portion of intestine or omentum, or both.

Inguinal and scrotal hernia is the protrusion of the omentum or a loop of the intestine or both. In many cases there is a hereditary predisposition, particularly in the equine species, and in some cases it is undoubtedly congenital. It is very often developed or increased by severe exertion. The method I have adopted for the operation of umbilical hernia is very simple and has in my practice proved safe and successful. The mode of procedure consists in securing the animal in the usual way as for castration. I use a clamp of my own design, which is made of two pieces of spring steel, one and one-fourth inches wide and ten inches long with two slots in each section of the clamp one-fourth inches wide and eight inches long, with a bolt and thumb screw at each end, one bolt being stationary and the other works on a hinge. The clamp is set on the hernia in the usual way, being careful to have the hernia sack inclosed; the thumb screws are now set tight to hold the clamp in place. I have two straight needles and a suture of No. 12 silk braid. Thread both needles with the same thread, then tie the ends of the thread together,

* Presented to the Iowa Veterinary Association, Cedar Rapids, November, 1911.

draw the needles so that the knot will be midway between the needles when the thread is stretched out. Then proceed to sew by passing the needle through the lower slot in the clamp, anterior or posterior as the case may be. Then pass both needles through the hernia sack, using the harness tug stitch, then put one thread around the needle, so as to make a surgeon's knot. Continue in this manner until you have reached the other end of the hernia sack or slot, taking about one inch to each stitch. Remove the clamp, paint the parts with iodine and leave the hernia sack to slough off, which will take eight or twelve days.

In inguinal and scrotal hernia, in a stallion, secure the animal, make an incision in the scrotum, cutting through the skin and dartos in the middle line of the testicle; draw the skin downwards and cause the testicle and its coverings to bulge. Now cut through the connective tissue and the cremasteric aponeurosis; this leaves the tunica vaginalis exposed, which must be left intact. Take the testicle, which is covered by the peritoneal sack, and by pressure break down the connective tissue that binds it to the scrotum until it is isolated as high as the inguinal ring. Be sure that the hernia is completely reduced, then place the clamp over the hernia sack as near the ring as possible, tighten thumb screws and proceed to sew, using the same kind of a stitch as used in umbilical hernia, except making the stitches shorter and use a single thread. When through, leave the thread long enough to reach through the opening in the skin. This being done, then remove the testicle and hernia sack by cutting through the slot in the clamp above the one you sew through (which should be below if the horse was on his feet); now, release the clamp and pack the inguinal canal, take a stitch or two in the skin and leave this packing in twenty-four hours. Be sure when the pack is taken out that the end of the thread is long enough to reach through the external opening so that it can be taken out when the stitches slough off.

I kept a record of a few cases that were operated on by the foregoing method which I will briefly mention. *Case No. 1* was a draft stallion four years old, with scrotal hernia.

History.—Left side of scrotum was considerably larger than right side at birth. At two years old the right side was as large as the left. The owner then disposed of him. The buyer used him in the stud, when the left side gradually enlarged until it hung as low down as the hock, with a diameter of about eight or ten inches. This case was what prompted me to use some device other than the common clamp, as it was a question as to whether

the clamp alone would bring around the desired result. On casting the patient, I discovered that instead of a single hernia I was confronted with a double hernia, therefore, operating on both sides, using the above described method. The stitches sloughed off the twelfth day and in six weeks the horse was put to work and today is as smooth as any gelding that was castrated at four years old. This operation was performed November 21, 1910.

Case No. 2 was a one-year-old draft colt, had scrotal hernia on left side. Hernia was first noticed by owner when colt was one week old. When operated on the hernia tumor was as large as a two-quart bowl. The same method was used. The stitches sloughed off in five days and parts completely healed in six weeks.

Case No. 3 was a trotting bred colt one year old, with umbilical hernia. Tumor was about six inches in diameter, opening in abdominal wall about four inches long and two inches wide. Was operated on as above described. Did not see the colt again for three months and did not learn from the owner how long before the hernia sack sloughed off, as he turned the colt to pasture the third day after the operation and did not see it for three weeks, and then the wound was nearly healed.

Case No. 4 was a draft colt, seven months old, with umbilical hernia, with a tumor the size of a coffee cup. The owner said the colt would have colic pains and roll and said that he would press the bowel back and the colt would be all right. Operated on November 7, 1911, and hernia sloughed off November 19, and saw colt on November 20 and the wound was almost healed.

The advantage of this method of operating, especially in umbilical hernia, is that the patient can be turned on pasture without any fear of trouble.

ECLAMPSIA IN THE MARE.

By FRANK T. KENELEY, Twin Falls, Idaho.

I may first state that before reading W. L. Williams' *Veterinary Obstetrics*, I was unaware that we had an eclampsia in the mare. In this work the author says that so far as he knew the first description of this disease was a paper presented by himself before the Illinois Veterinary Medical Association, and which later appeared in the *AMERICAN VETERINARY REVIEW*, Vol. 14, page 559. His description of several cases in which he was able to watch their course throughout gives a very broad account of this disease from a diagnostic point.

History.—This mare was of a large draft type, about nine years old, and had foaled in the pasturage some thirty-six hours before, and when found in the morning she showed no evidence of having had a difficult labor and the colt was up nursing; she was caught-up and put in a large box stall and allowed to run in a small lot when she chose; she was allowed an abundance of hay, also a light grain ration. Both mare and colt seemed to be doing well up to this time and the owner had gone in to feed her as usual about six o'clock; when he left she was eating, but on returning about an hour later he found her getting up and down covered with sweat and having repeated spasms all over her body; and when he 'phoned me he was very anxious that I should "come right away."

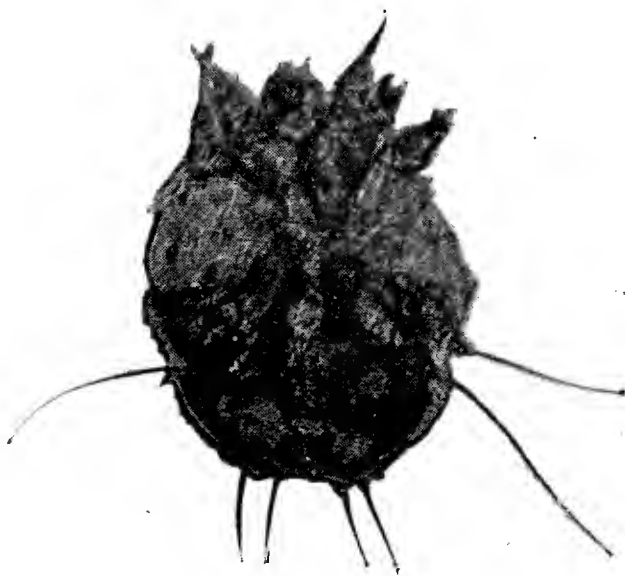
Symptoms.—When I arrived an hour later the aggravated symptoms with which the disease had been ushered in, had somewhat abated, and she was in a recumbent position and did not seem to be suffering much pain; the sweating had also ceased, but she had only partly dried off and the body was cold. Her expression was anxious and painful, the mucous membranes were only slightly injected, pulse fast and weak, temperature normal, respiration only slightly above normal; she would put her head around to her side as though suffering some abdominal pain, when down she would lie in a recumbent position. She remained in this condition for about an hour, during which time, only slight spasms were noticed, principally about the head, neck and flank, but in about forty minutes she became quite restless and commenced to sweat freely, getting up and down and had rather violent spasms; these symptoms continued until she was relieved by the following mixture in medium sized doses: Belladonna, hoscyanus and canabus indica. When relief was apparent the mixture was discontinued; but in this case, after the treatment was discontinued for a few hours, the symptoms developed again, but would subside after a few doses of the above mixture was given. And this continued for the three following days, after which the mare regained her normal condition. During this time she consumed considerable of the above drugs. I am not offering this case as something new, but I am quite sure I have lost a few mares with this disease by not knowing what it was, and perhaps others have, too. The above treatment is the one recommended by Prof. Williams, excepting that the hoscyanus was not included in his treatment.

A CASE OF SARCOPTIC MANGE IN THE HOG.

By B. F. KAUPP, Prof. of Path. Div. Vet. Sci. Colo. Agri. College and Pathologist to the Colo. Agri. Experiment Station.

While various skin diseases are common among hogs, as eczemas, urticarias, dermatitis in various stages (some of which somewhat simulate mange, of the sarcoptic variety, but upon microscopic examination are found to be a dermatitis), also follicular mange, yet sarcoptic scabies among hogs, in the experience of the writer, has been very rare.

The following interesting report came to this laboratory along with some specimens sent by a California veterinarian, for classification. Only one hog of a herd of about 200 was reported to have been infested. Through what channel this one became in-



Sarcoptes Scabiei Variety Suis.—Female.

festated could not be definitely determined. Thick, scaly scales or crusts involved the face, ears and back as far as the loins. Large scales which clustered in bunches, hung as low down as the elbows. The outer scales were very hard and covered with dirt. A knife was used to cut off some of the larger scales. From the under surface of these specimens the parasites were found. The cut here reproduced is from a photomicrograph of one of the females.

SECRETARY LOBLEIN's ambition to make the 1912 mid-summer convention of New Jersey veterinarians a "banner meeting" has been fully realized, as at its close some of the oldest members stood up and enthusiastically declared it "the best meeting in the history of the association."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

DIFFICULT CASE OF PARTURITION IN A CLYDESDALE MARE [*Henry Thompson, M.R.C.V.S.*].—Twenty-year-old pregnant mare, seventeen days overdue of her usual time, had a very difficult delivery. The foal presented itself with both hocks pressing on the brim of the pelvis and when after considerable work the hind legs were secured and put in good position, it was found that the head was bent over the leg and again the delivery arrested, until this was straightened on the neck and finally the foal was extracted. It took one hour and forty minutes to complete the delivery. The mare rallied wonderfully, but finally died 50 hours after the operation. The following measurements and weight of the foal are given as a record to any ever published: Length from poll to head of the tail, 50 inches; round the girth, 33½; length of head from poll to the nose, 18; from withers to the foot, 44; from hip to foot, 40; round stifle joint, 22½; round hind shank, 6; round fore shank, 5½. Weight, 156 pounds.—(*Vet. Record.*)

CASTOR OIL BEAN POISONING [*Thomas Parker, F.R.C.V.S.*]. Alarming outbreak of disease among swine is reported and the author investigated. Out of 52 swine on the premises, three sows and three store pigs were ill, one boar, one sow and three small store pigs had died. The symptoms observed were: Off food, lying down, disinclined to move, crouching under the bedding, somewhat tucked up in the abdomen, abdominal pains, ears drawn back, surface of the body almost cold. *Post mortem*: Hemorrhagic gastroenteritis with large clots of blood in small intestine. Mesenteric lymphatic glands highly congested. Analysis of the meal used to feed the pigs was shown to contain a large quantity of crushed castor oil beans, to which there was but little doubt the death of the pigs was due.—(*Vet. Record.*)

PARALYSIS OF THE LARGE INTESTINES WITH PASSIVE IMPACTION [*J. Willett, M.R.C.V.S.*].—Bay van gelding five years

old, recently purchased, has been ailing, and for ten days received twice a day a mixture in which entered half an ounce of tincture opii. Since six days she has passed no fœces. When seen she appeared comfortable, coat glossy, no pain, eating. Pulse 50, temperature 99, 2 F. conjunctiva bilious, no peristalsis, rectum empty and dry, colon distended with hard mass. The treatment consisted of aloetic purgative, soap-water injections, eserine, chloride of barium, linseed oil, strychnine. Almost no result was obtained except towards the 15th day of the treatment when considerable pain was exhibited for the first time and a large quantity of fœces was expelled. From that on, recovery followed. No bad effects were noticed from the frequent use of chloride of barium, which was given in small doses.—(*Vet. Journ.*)

TETANUS TREATED WITH ANTITETANIC SERUM AND HYPODERMIC INJECTIONS OF SULPHATE OF MAGNESIUM—RECOVERY [*George Heslop, L.V.S.*].—Injured by barbed wire, this four-year-old mare developed tetanus. She received the first day 60 c.c. of Parke, Davis & Co.'s anti-tetanic serum intravenously, and on one side of the neck 1½ ounce of a 15 per cent. sterile magnesium solution, injected hypodermically. Those were repeated six hours later. On the second day the same injections were renewed, and also on the third day. On the fourth, fifth and sixth days the doses were reduced to 40 c.c. of serum and 1 ounce of magnesium, repeated twice. On the seventh, another reduction to 30 c.c. of serum and no magnesium. On the eighth day, same thing and on the ninth all treatment was stopped, the animal eating well and entering into convalescence. Improvement was gradual after the fifth day. Chloral hydrate, dark stall, quietness formed also essential parts of the treatment. One quite large abscess formed on the neck resulting from the injection of magnesium.—(*Vet. Journ.*)

TRUE HEMORRHOIDS IN HORSE [*Prof. F. Hobday, F.R.C.V.S. and Guy Sutton, F.R.C.V.S.*].—For the past five months the driver of this thirteen-year-old coach horse has noticed that the animal showed acute irritation of the rectum after defecation, and now when an action of the bowels takes place, a large and objectionable swelling as big as an ordinary orange is seen protruding for some few minutes from the anus. Examination per rectum revealed a large cluster of congested and dilated veins, just within the anus. Under the influence of cocaine, a Chinese

silk ligature was placed round the base and after three days the removal was completed by excision.—(*Vet Journ.*)

VERY BAD CASE OF PROLAPSUS OF THE VAGINA AND RECTUM OF A HEIFER—IS IT HEREDITARY? [*Prof. Fred Hobday, F.R.C.V.S.*].—Four-year-old valuable shorthorn had first a prolapsus of the vagina. It was returned in place. On the third day it had come back and complicated with one of the rectum. This could be reduced, but amputation of the vaginal protuberance was the only chance of relief. This was done, but the cow strained so much after, that the intestines were forced out and the cow was destroyed. Prof. Hobday adds in his record: "I should like to hear whether any readers of the *Journal* have had instances of heredity of this serious ailment," as the owner of the cow has written a letter stating that in the family of this animal other cases had been noticed.—(*Vet. Journ.*)

THREE CASES OF PROLAPSUS ANI IN DOGS [*H. C. Ganguly, G.V.R.C.*].—The concise story of three cases in pups when the prolapsus measured in length 5 inches, three inches and one foot. The treatment consisted in careful disinfection, the introduction of a gum elastic rod of about half an inch diameter, lubricated with cocoa-nut oil introduced in the rectum and the everted portion of the organ returned gently with the aid of the fingers and the rod.

This last was then withdrawn and 10 ounces of about 2 c.c. solution of liquor opii injected in the rectum. Laxative diet was prescribed. The three animals made rapid recovery.—(*Ibid.*)

INTERESTING CASE OF INGUINAL HERNIA [*Henry Taylor, F.R.C.V.S.*].—Operated successfully once for inguinal hernia of the left side, a prize bitch, shortly after has one on the opposite side for which she is to be operated. But this time when the hernial sac was cut down upon, the contents could not be returned as the sac had an unusual shape. "It bifurcated after passing through the inguinal canal, one part lying almost behind it and the other passing directly forward for about three inches. The skin incision having been enlarged, the contents were returned after some time and a catgut ligature tied round the sac at its base. As the skin was about to be sewn, the uterus with a large portion of the omentum slipped out through the umbilical ring, the ligature round the base of the sac having slipped off.

The reduction of these prolapsed organs was rather difficult. The ring was then sutured with catgut and then the muscles and outside structures. No peritonitis or suppuration followed and recovery was complete.—(*Vet Journ.*)

IRRIGATION OF JOINT CAVITY [*J. B. Collyer, M.R.C.V.S.*].—A chestnut gelding received a contused wound over the orbital arch and wing of the atlas. On the following day synovial discharge took place. Treated with oil of clover and zinc ointment it kept up for several days, when it then became purulent and mixed with blood. Probing revealed a pouch which was freely open and then irrigation of solution of tincture of iodine 1 in 20 was injected twice a day. After some little time improvement set in in the flow of the synovial discharge, but while the condition was mending it was noticed that the movements of the jaws were limited and the lateral motion of the lower jaw also became difficult. The animal was then left to himself; turned out he was left to grass for some time and finally the motion of the jaws having resumed their freedom, the horse ate well, grew fat, and was sent to work. He had been laid up six months.—(*Vet. Record.*)

EARLY USE OF THE KNIFE IN PARTURITION CASES IN MARES [*Alec McTurk, M.R.C.V.S.*].—For the writer, the use of the knife in difficult cases of foaling ought to be resorted to “without any hesitation if after ten or fifteen minutes’ work the foetus cannot be got into proper position.” The use of the block and pulleys, the barbarous method of yoking a horse to the foal, are gross cruelty and neither more nor less than murder of the unfortunate mother. He then records a few cases of dystokia in which by the early amputation of one leg he has been able to remove foals comparatively easily and in all cases save the mare, the mother, which was a great satisfaction to the owner, and whose death would not have served to the reputation of the accoucheur. The average time taken to effect the delivery in the cases recorded was about one and a half hours. Recovery in all was uninterrupted, except in one case where a mild attack of laminitis developed. The writer does not advocate haphazard use of the knife, but believes that in many cases the mare dies when she could have been saved.—(*Vet. Record.*)

STRANGLES WITH POST-PHARYNGEAL ABSCESS [*C. C. H. Jolliffe, F.R.C.V.S.*].—The history of protracted case which

lasted from the end of December to the end of the following April. Four-year-old black mare had first small sub-maxillary abscess. Then another of the submaxillary glands. Swelling of that region, of the laryngeal and parotid of both sides followed. Oedema of the face, mouth and lips takes place and the four extremities are also swollen. Dyspnea takes place and is relieved by incision of an abscess on the right side. One pint of pus escapes. A large vein was divided and plugging of the cavity necessary. Another incision opens a large abscess on the left side. The cavities of these two abscesses communicate. The condition then began to improve, but while the closing of the cavities goes on, the discharge continues. Consultation is taken. There is much swelling yet, small sinus-like suppurating on each side of the throat, the discharge is more or less abundant. Post pharyngeal abscess is diagnosed. The mare is cast, the suppurating channels are both enlarged and the post-pharyngeal abscess situated between the back of the pharynx and the cervical vertebræ is revealed. It is freely opened as high as possible, carefully avoiding the surrounding blood vessels, and after flooding it out clean, the cavity is dressed with cyanide gauze. No trouble followed the operation, and the mare with careful anti-septic attendance finally made a good recovery.—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

HERNIA OF THE CUTANEOUS COVERING OF THE PENIS IN BULLS [*M. A. Davie*].—This condition is important when observed in animals used for breeding purposes.

1. *Observation*.—A bull, immediately after covering, presented at the external orifice of the sheath, a membranous prolongation-making hernia and looking backwards. It is rounded, measures 10 centimeters in length, is reddish in color and at its anterior portion forms a curve projecting at the entrance of the sheath. At its free extremity there is an opening through which urine dribbles. The penis cannot come out. The membrane is the skin everted which lines the external face of the penis. The hernia is reduced and kept in place by a bandage supporting an astringent and aseptic compress. No further trouble. The animal resumes its functions.

2. *Observation*.—This case is more serious. The tumefaction was observed when it had been present since several days. The tumor is as big as the fist and covered with pus and adhering substances. It is oblong and presents at its upper end a circular cord preventing its return into the sheath. The urine escapes as in the preceding case. After thorough cleaning, the irritated membrane was returned in its position and astringent and antiseptic treatment prescribed. But notwithstanding the care, the relief was not complete, as after a few days the bull had an erection and the projection of the skin returned and required a long time to recede. The bull could no longer be safely used for breeding and was fattened for the butcher.

TREATMENT OF HEMOGLOBINURIA [*Mr. Lacombe*].—This is the record of the good results obtained by the author in two cases of azoturia. In one the recovery might have taken place with the ordinary classical treatment, but in the second the animal was considered as lost. The treatment consisted in the subcutaneous insufflation of sterilized air by the method of Brunswick. To the first horse about two litres were injected in the triceps region. In the second between 8 and 10 litres were pushed round the stifle and back of the shoulder. The swelling due to the inflated air lasted for some fifteen days before it disappeared. The recovery in the last horse was as rapid as it sometimes occurs in parturient apoplexy of cows. The animal got up a few hours after the injection. In both horses, however, bleeding at the jugular and laxatives had also been prescribed.—(*Bull. de la Soc. Cent.*)

SEPTIC PERITONITIS DUE TO FOREIGN BODY OF THE RETICULUM IN A COW [*Mr. Pierre Bitard*].—Nine-year-old cow recently purchased, although she has all the signs of health, moans repeatedly. About a month ago she shows stiffness in walking and her moanings are louder and more frequent. A swelling develops at the lower part of the left side of the chest, an abscess follows, ulcerates, discharges bloody pus, having very bad odor, and the owner, squeezing it, extracts a long knitting needle which from the reticulum had made its way out. This abscess gets well in due time and the cow seemed to be in perfect health, except that her abdomen looked rather larger, but without tympanitis. Suddenly the appetite gave away, rumination stops and there is no defecation. The animal lays on right sternal decubitus, respiration is slow with painful expiration, the abdo-

men is very large. By auscultation, the vermicular motions of the rumen are found absent, the peristalsis of the intestine is also wanting. The rumen yet contains some food unpacked. The countenance of the cow is good, eyes widely open, no nasal discharge, nose moist. Temperature 37. Veratrine and arecoline are ordered, as the case is considered as one of gastro-intestinal trouble, the history of the extraction of the needle not being known. At first the animal seemed to show some improvement. The appetite returned. But after two days a change took place for the worse and the animal died. At the post mortem were found all the characteristic lesions of septic peritonitis, and besides, on the right side of the pelvis, on the base of the tail, at the posterior portion of the ischiatic ligament, there was an enormous swelling pushing against the vulva and the rectum. The skin was normal and when incised there escaped an enormous quantity of sanious, greyish, grumelous pus, having a very offensive odor. The large diverticulum communicated with the abdomen.—(*Prog. Veter.*)

LABARRAQUE SOLUTION—INTESTINAL AND SURGICAL ANTI-SEPTIC [*A. Querruan, Army Veterinarian*].—This old preparation of chloride of soda has lately been recommended for its properties and its actions in purulent ophtahlmy, pseudo-membraneous affections and also as a powerful antiseptic. In veterinary medicine, it has been given internally in colic and for free washings of the intestines in solution of 12 grams for 1000 for large animals, repeated two or three times a day. The author records a few cases where the effects have been very surprising. A case of suppurative arthritis of the left fore fetlock was cured in fifteen days by baths with Labarraque solution (18 p. 1000) renewed for half an hour three times a day. A deep punctured wound of the foot with suppurating synovial discharge, a suppurative synovitis of the tarsal sheath, one of the left hock, another where autoplasmic treatment of both knees was complicated with hematomas and enormous swelling of the forearms, are described and all terminated with very advantageous recoveries. The author concludes in saying that this old remedy is a cheap powerful antiseptic, easily handled and useful for numerous applications in veterinary medicine. It can be used as rectal douches for intestinal antisepsy, against fibrinous exudates of mucous and serous membranes and also in synovial affections.—(*Rec. de Med. Vet.*)

BIER'S METHOD IN CATTLE PRACTICE—SUPPURATIVE ARTHRITIS OF THE FETLOCK [*Mr. L. Paris*].—Six-months-old heifer had deep wound of the right fore fetlock. There is a large granulating mass as big as a large nut and in its center a fistulous opening from which escapes purulent synovia. The proud fleshy tumour was excised and the wound dressed with brandy and boric acid, a rubber band was applied every day for two hours in the middle of the metacarpal region and tied so that the finger could freely be passed under it. On the fifth application the synovia stopped running, in a week after the animal stood well on its leg, all discharge had stopped and recovery followed without event.—(*Ibid.*)

DEEP WOUND OF THE RIGHT ORBIT AND FRONTAL SINUS [*Mr. Floriot, Army Veterinarian*].—A six-year-old mare had the hook, which supports the swinging bar separating her from the stall next to her, entered in her right orbit. Relieved with great difficulty, it was found that the eye is almost entirely enucleated and that there is a fracture above the orbit of the frontal bone, the sinus being open. The globe of the eye was removed and an opening was then detected establishing a direct communication with the frontal sinus and the orbit. The frontal plate was trephined to allow the introduction of a drain. Suppuration of good nature took place, after a few days with repeated injections of peroxide. Gradually the wound closed and the recovery was without complication except the return of a slight collection in the sinus which required another trephining to give escape to a certain amount of suppuration.—(*Ibid.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

HYDRONEPHROSIS CAUSED BY VESICAL CANCER IN A DOG [*Prof. E. Huynen*].—This occurred in a six-year-old dog, with the history that he has slowly lost flesh and at intervals has passed bloody urine. The general condition is bad, the animal is very thin, is indifferent to all external surroundings. Respiration is normal. Pulse strong and accelerated. Mucous membranes pale. Cardiac sounds normal. Appetite bad, no vomiting, feces normal. Micturition frequent and painful and in small quantity. Urine is darkish, strongly ammoniacal and alkaline. It contains albumin. It leaves a deposit of white corpuscles, desquamated

cells from the bladder, various microbes and no red globules. Through the rectum the prostate is normal. Abdominal palpation reveals the presence of a hard mass, as big as an egg, movable, and situated on the limit of abdominal cavity and anterior straight of the pelvis. This mass forms part of the bladder and to establish a diagnosis of its being a calculus or a vesical tumor, laparotomy is performed. The bladder is thus exposed, its size is normal, but it is the seat of a tumor spread over the two anterior thirds of the vesical wall. Interference is unnecessary, the dog was destroyed. At the postmortem, the vesical tumor was found occupying the anterior extremity of the bladder and spreading on its superior face as far as the vesical trigone; and the histological examination classified it as a primitive cancer of the bladder. Both ureters run through the tumor, the left having the urine pass quite easily, while the right is completely obliterated. This is also largely distended and as big as one finger. The right kidney is three times its ordinary size, its surface is smooth and whitish. Incised, a yellowish, sticky fluid escapes. The walls of that kidney are but three millimeters thick.—(*Annal. de Med. Vet. Bruxelles.*)

FOREIGN BODY IN THE ŒSOPHAGUS—ŒDEMA OF THE HEAD IN A DOG [*Mr. Gaucet*].—Three-months-old collie has a swelling of the entire head, which takes place suddenly. The eyelids are œdematous, and the eyes seem sunken in their orbits. While being examined the animal is taken with a violent spell of coughing, followed by strong efforts for vomiting, but without results. The mouth and pharynx are then carefully examined, but nothing abnormal is found. Same result with palpation on the œsophagus and the abdomen. A subcutaneous injection of apomorphine is made and is followed by the expulsion of a rubber ball partially broken in two. The cough and attempts to vomit ceased at once. The next day the swelling of the eyelids and head had entirely subsided. It is probable that the ball arrested in the œsophagus at the anterior part of its intra-thoracic course, had produced pressure on the jugulars and caused by serous transudation the swelling of the parts situated forward of the point of pressure.—(*Annales de Bruxelles.*)

SIMPLE SPASMODIC TABES IN A FILLY [*H. R. Bredo*].—Heavy draught filly, aged only a few days, has been well since her birth, when some ten days after she was found lying down and unable to get up unless she is helped. Then it is observed

that she does not rest on her left hind leg. Two days after it is the right which is also kept in extension as if dislocation of the patella was present. The general condition is otherwise good and the functions are normal. The muscles of the back, of the thighs and shanks are hard. Pricks with needle give rise to violent struggles, the tendinous reflexes are exaggerated. The left leg is sometimes spasmodically carried in adduction and then forcibly backwards. Passive motions give rise to violent reactions resembling epileptoid trepidations of the disease of Jackson. Diagnosis was made by the writer by comparing the symptoms to those observed in children and described as the spinal form of the disease of Little. The treatment consisted in stimulating frictions three times a day over the loins, thighs and shanks. Passive motions five times a day of all the joints of the legs affected. Iodide of potassium internally. After the seventh day of this treatment, improvement begins to be observed and after two weeks convalescence was well marked. Unfortunately as recovery was gradually progressing the little animal took bronchopneumonia and died with it.—(*Bull. Med. Vet. Prat.*)

ALFALFA SUITABLE FOR BROOD MARES.—Last year we had much discussion as to whether alfalfa hay or pasture influenced the fecundity of mares. The general impression in the west seems to be that it does have an influence in an unfavorable way. George Wright of Argentina on the other hand reports pasturing a large number of mares exclusively on alfalfa pasture, with a very large percentage of foals resulting. Our own large draft mares had alfalfa practically every day of the past year, and yet we have a large percentage of colts born and coming, all strong and fine thus far. I yet think one could feed too much alfalfa to mares, for it is a rich feed; but let no man hesitate to sow the crop for fear he cannot get colts, if he uses it in moderation.

We have been careful that all our foals were born out on clean grass pasture. We also have disinfected the navels, so we have had no navel trouble this year. It is hard to save a colt born in a stable reeking with germs. Dr. Simpson, a veterinarian of Indiana, dropped me a hint recently. He says the straw on which a colt may lie, if it is to be born in the stable, should be sunned for days before it is brought in for bedding. That looks sensible. (JOSEPH E. WING, in *Breeder's Gazette*.)

BREEDING PROBLEMS.

BREEDING PROBLEMS AND THE ARMY.

By OLAF SCHWARZKOPF, Fort Sam Houston, Texas.

The "Remount question," which suddenly appeared and seriously threatened the army a few years ago, has gradually developed into the problem how to breed suitable cavalry horses in our country. Both questions have been arousing such widespread interest, and they have led to so diverse discussions in army service journals and agricultural papers, that they have become of the deepest concern to the army veterinarian, and must need also the attention of all veterinarians practicing in horse-breeding districts.

It is the birthright of our people and the tendency of our government to meet emergencies by sporadic and spasmodic efforts, and these two problems are no exception, inasmuch as they were allowed to come upon us abruptly and are now in danger of being met with hastily.

Credit is due to the army veterinarian, that he was the first to foresee the unavoidable shortage of suitable remounts for our cavalry, little as this is known. It was more than fifteen years ago when some of our colleagues in the service, now dead, as well as others still living, sounded an early warning, but this remained unheeded by the war department and the horse-breeders generally.

Things had to come the way they did. In the nineties horse-breeding, helter-skelter, uncontrolled, unguided or misguided horse-breeding, all were irrational, produced an oversupply of horses of inferior quality, which resulted in the dropping of prices so low that they became practically worthless. Veterinarians then practicing well remember that a charge of two dollars for a visit to a sick horse was considered exorbitant, the owner estimating the value of his \$250 horse at about \$25, and he preferred to let him die rather than pay such a fee. People in many sections of the country did not know what to do with all the horses, and thousands were butchered, ostensibly for export, while other thousands were simply shot in the prairies to preserve the grass for cattle and sheep, or the carasses were fed to hogs.

It was an extreme that had been reached, and when the reaction set in, the pendulum swung towards the other extreme:

The abandonment of breeding of the American lightweight, quick-moving, enduring horse, particularly of those strains suitable for riding purposes. About the same time the Spanish-American war, the Philippine war and the South African war nearly took the rest of this kind of horses out of the country, never to return, and numbers of valuable breeding mares and stallions, entirely suitable to produce fair cavalry horses, were eagerly bought up by foreign buyers at the low figures quoted. All this short-sighted, almost hysterical squandering of horses was looked upon by many breeders as a welcome "opening of a world-market" for our horses.

It was in 1902 when the writer had an opportunity to semi-officially investigate this situation, and the result arrived at appeared so serious as to induce him to take up the question of breeding of cavalry horses in the *Breeders' Gazette*, explaining the requirements of such a horse, and advocating government assistance and control over the horse-breeding operations. Some breeders, and a few army officers, seconded the recommendation, but the great majority of both parties still maintained that such a move would be a paternalism distasteful to our people and unnecessary, because our country was well able to produce the best cavalry horse in the world in any number desired. They could not see that a calamity was at our door, and that it was yet time to avert it by ordinary foresight and preventive action.

Nothing much was heard of the subject until about four years ago the war department suddenly discovered that cavalry horses could no longer be procured by the contract system of purchase, then in vogue. The quartermaster general of the army became alarmed and came to the conclusion that the establishment of an Army Remount Department would best serve as a solution of the problem confronting him. He studied the foreign arrangements in this line and worked out a plan that delighted the hearts of the army veterinarians, providing, as it did, for one chief veterinarian at the general remount office, and numerous other veterinary inspectors and assistants to serve at the remount stations. But the war department, and particularly Congress, considered this plan too elaborate, cut it hither and thither, and all that came out of it was the establishment of three remount depots in 1908, each in charge of a cavalry officer, assisted by a contract veterinarian. The latter was not required to give proof of his special qualification for such a place, for which leniency he was left in a position without official standing or adequate emoluments.

It is now generally concluded by army officers and veterina-

rians that in spite of this rudimentary system inaugurated it has proved its great superiority over the previous contract system of purchase of army horses, mainly because the middleman in the deal was eliminated, the purchase being made directly from the breeder. While unserviceable horses still come into the ranks, on the whole the remounts secured in this way are of a better class, better in comparison to remounts formerly offered and accepted, but still far below the standard set by those armies and countries where a typical cavalry horse is being bred for the purpose.

It required only a few years of existence and work of our remount depots to demonstrate that suitable horses can only be bought under any system, if they are produced. That the production of these horses had practically ceased, was the next discovery. The breeders generally, with few exceptions, were not seriously interested in a matter that concerned mainly the war department, and the latter was forced to seek the good offices of the agricultural department to help them out of the quandary, as more in touch with the horse breeders.

Anyone who has followed the birth and development of this move of the war department towards the department of agriculture cannot help but admit with pleasure that the problem was nicely met with in conception. Dr. Melvin and Mr. Rommel of this department proved themselves equal to the new task before them. They worked out a plan of government control of the breeding of army horses that is quite in harmony with the conditions in this country, and they put it into practical working order. While the results likely to be attained appear yet as doubtful to many army officers who detest any idea or practice imported from abroad, it will all work out well towards the end, if only great mistakes are avoided.

Such great mistakes have been made by all foreign governments in the beginning and early development of their horse-breeding operations. They were always followed by dire results, stretching over longer or shorter periods of time. One cannot study the history of such government studs as those of Trakehnen in Germany, of Mezoheues in Austria-Hungary, even of the less military and more civil administration of the British breeding studs in India, without being impressed with the waste of time expended in unfruitful clashes of opinion on theories of breeding, of wanton experiments in mixing breeds, and, not the least, in the stubborn attempts of horse fanciers possessed of fantastic ideas of breeding, to keep themselves in lucrative offices. In all of these countries the veterinarian has finally

won out, not because he could muster official or social influence, but on merit only. We may well hope and pray to be spared similar experience in this new government undertaking of our own; but if we should go the same way as the others did, let us prepare ourselves to win, for the better that we can do to our country.

Let us study the matter thoroughly and discuss it frankly in all directions, and then let us branch out into the forefront. So far, we in the army at least, have been overlooked in the co-operation in this new breeding scheme of the government, and others, by virtue of their rank, have been chosen as counselors. This could be expected to be the condition at the start, because it is exactly what happened abroad, only longer ago. But the future must find us forging ahead, must prove our better knowledge, show our calmer judgment, and demonstrate our greater practical skill, if you wish.

It is pleasant to chronicle that already notice has been taken of the valuable assistance the veterinarian can render in breeding problems, at present only from mere private sources. Aside from Dr. Melvin's excellent official publications on breeding of army horses, hunters, etc., during the past few years, the appearance of such articles as that of Dr. Nockald's, First Cavalry, on "Notes on the Progenitors of Certain Strains of the Modern American Horse," published in the *Cavalry Journal*, as also those of Dr. Griffin, Third Artillery, and Dr. D. Arthur Hughes on the remount question, and several briefer notes made by other army veterinarians, have been favorably commented upon by interested army officers. That also an official representation of veterinarians is bound to be acknowledged can be judged by a recent remark of an army officer in the *Cavalry Journal* who, taking occasion to scold our national government for not sooner enacting a breeding strain in this country, said with emphasis: "It remained for an obscure veterinarian in Wisconsin to quietly force through the legislature of his state the first stallion law in America." While none of us will admit that our esteemed colleague, Dr. Alexander, occupies an obscure position, this adjective may be pardoned when we adjust our eyes to the spectacles through which this writer looked at the question.

There is, then, much to encourage us, even in the face of the many obstacles which we shall have to overcome, to conquer a new field of work. It is ours by right, but as we have not claimed it particularly, it has practically been taken possession of by amateurs, from whom we shall have to wrestle it. There is no need

of a third party in the realm of horse-breeding; the farmer-breeder and the veterinarian can conscientiously do all the work inherent to it by nature and demanded by our present day civilization.

(To be continued.)

ARMY VETERINARY DEPARTMENT.

The fate of the Army Veterinary Bill before Congress will be decided in the latter part of July or early in August. At this writing the bill has not been passed by the House of Representatives, but it is hoped by Chairman Hoskins that it will come to a vote on July 15 or 22. It will need an extraordinary strong effort and endurance to get the bill considered in the Senate before adjournment, but it is Dr. Hoskins' firm intention to let no stone unturned to push the bill through during this session of Congress, which is the ardent wish of the army veterinarians. We trust and hope that he and his associates will succeed in their labors in behalf of an improved army veterinary service.

O. S.

OBITUARY.

JOHN BENNETT, V. M. D.

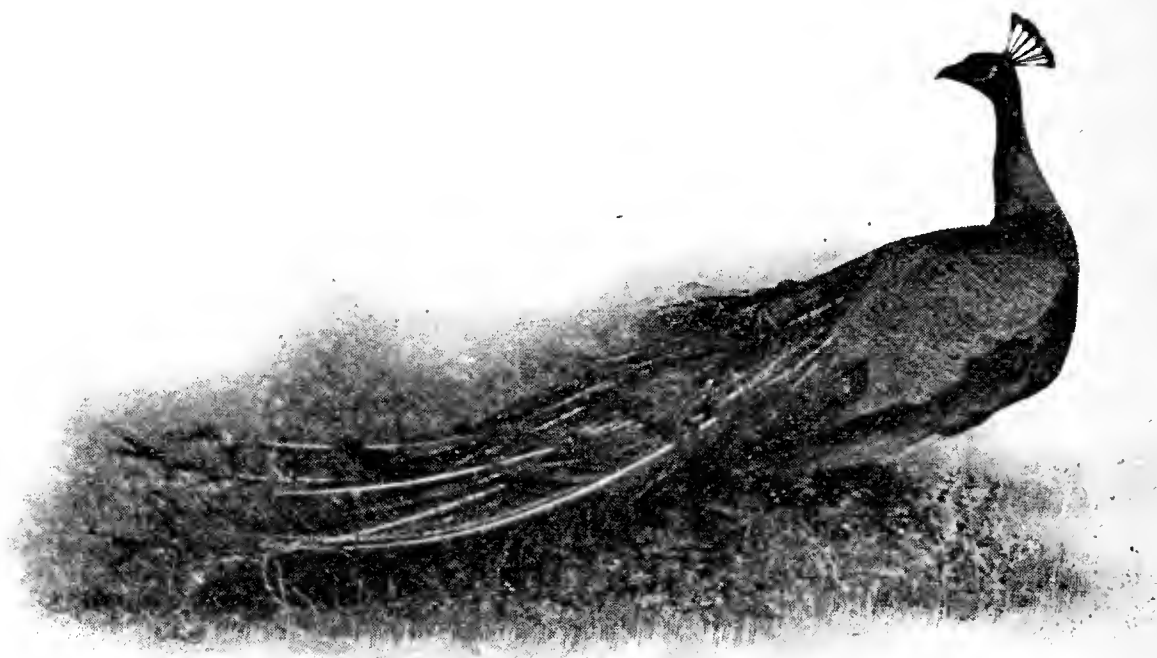
Dr. John Bennett, Tyrone, Blair County, Pennsylvania, died July 2 last in his fifty-first year. Dr. Bennett was born in Johnsville, Bucks County, Pa., in 1862, and spent the early part of his life at that place, receiving his earlier education in a private school in Hatboro of the same county. He studied medicine at Bellevue Medical College, New York City, and veterinary medicine at the Veterinary School of the University of Pennsylvania, graduating with the first class from that school. Born of Quaker parentage, Dr. Bennett was himself a strict Quaker, and was held in high esteem by his townsmen in Ambler and Tyrone, where he practiced, for his manly and gentlemanly principles. He was a Free Mason. The whole veterinary profession, not only of Pennsylvania, but of America, extends its sympathy to the sorrowing widow that survives him.

CORRESPONDENCE.

BRANKSMARE, BARBADOS, WEST INDIES, June 16, 1912.
To Editor of AMERICAN VETERINARY REVIEW:

SIR—The inclosed photo is of a pea hen, which has for some reason assumed the plumage of a male bird, after doing which she is unable to spread her tail.

This peculiar bird is the property of Mr. Douglas Carter, a merchant of this city.



The above pea hen has been in my possession for about ten years, and assumed the plumage of a cock about three years ago.

D. H. R. CARTER.

Mr. Carter tells me that she has often laid, but her eggs never hatched. She was for some years quite satisfied with the usual appearance of a hen, but owing to some freak, she developed her present appearance.

Is there a suffragette microbe by which she could have been inoculated?

Hoping you will find this of sufficient interest for a place in your valuable periodical,

I am yours,

R. A. STOUTE,
Government Veterinary Surgeon.

SOCIETY MEETINGS.

COLORADO VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of this association was held in the buildings of the Division of Veterinary Medicine, Colorado Agricultural College, Ft. Collins, Colo., May 31 and June 1, 1912.

This meeting was considered to be the best meeting in the history of the association. About 40 veterinarians and 50 students of veterinary medicine were present. There were also many of the ladies of the veterinarians present.

THE BUSINESS MEETING.

The address of welcome was given by Mr. Fred P. Stow on behalf of the Mayor of the city. Address of welcome to the college was given by Dean S. Arthur Johnson. Response to these addresses was made on behalf of the association by Dr. Geo. W. Dickey.

The minutes of the previous meeting were read and approved.

It was moved, seconded and carried that the president appoint a committee to define the terms used in the State Stallion Law.

The following committee was appointed: Dr. I. E. Newsom, chairman; Dr. Geo. W. Dickey, Dr. R. H. Bird.

The following is the report of the committee:

Spavin shall be understood to mean bone spavin only.

Ringbone shall be understood as any bony enlargement involving the joints of the limb below the fetlock.

Roaring shall be understood to mean a loud and unnatural sound caused by paralysis of one or more muscles of the larynx.

Periodic ophthalmia shall be understood to mean an acute periodic inflammation of the internal structures of the eye, resulting finally in blindness.

Venereal diseases shall be understood as meaning dourine, coital exanthema or any other contagious or infectious disease of the generative organs communicable to the female.

The report was adopted after much discussion and particularly a lively one on the subject of spavin. The secretary was instructed to send copies of this report to each member of the association, to the secretary of the Stock Inspection Board.

It was moved, seconded and carried that the president appoint a committee to investigate the feasibility of the members of the association carrying an advertisement in the *Record Stockman*, indicating that they are graduates and authorized to inspect stallions and jacks for licenses under the State Stallion and Jack Law.

The following committee was appointed: Dr. A. W. Whitehouse, chairman; Dr. T. F. Quinn, Dr. C. G. Lamb.

The following is the report of the committee:

It is decided to recommend to this association that the time is not yet ripe to carry the advertisement in the *Record Stockman*.

The report was adopted.

The question of charge for expenses in addition to the charge of \$3 allowed by law was discussed. Mr. Fred P. Johnson, secretary of the State Stock Growers' Association, stated that it was intended by the framers of the bill that the charge of \$3 be made for the examination and additional charge for the expense the practitioner was put to in reaching the stud.

Mr. Johnson suggested that the association should become a member of the State Stock Growers' Association. This association is a strong organization in the state and is in a position to greatly aid the veterinarians in securing various needed legislation.

It was moved, seconded and carried that this association make application to become a member of the State Stock Growers' Association.

It was moved, seconded and carried that we recommend to the Stock Growers' Association that they have the stallion and jack law so amended that the licenses expire December 31. This has its advantages, both to the horse and jack owner, as well as to the veterinarian.

It was moved, seconded and carried that a committee be appointed to draw up resolutions relating to the appointment of competent veterinarians to the positions of food inspector and meat inspector.

The following committee was appointed: Dr. Geo. H. Glover, chairman; Dr. Chas. G. Lamb, Dr. V. J. Ayres.

The following is the committee's report:

Whereas, It has come to the knowledge of this association that incompetent men, because of lack of professional training, have for political and other reasons, been appointed to position as milk inspectors, meat inspectors and in other lines calculated to guard the animal wealth and public health, and

Whereas, It has come to our knowledge that several unqualified men are now applicants for positions of dairy and meat inspectors in Denver, and that unqualified men have recently been appointed to similar positions in the state of Colorado, and

Whereas, The State of Colorado is spending much money in educating men at the State Agricultural College especially for this work, and there are many qualified men in the state who are available for these positions, therefore be it

Resolved, That we hereby protest against such practice and respectfully request that in the interests of the public health and fairness to the veterinary profession, that only men be appointed to positions requiring a knowledge of veterinary sanitary science as can qualify professionally. Signed:

GEO. H. GLOVER,
CHAS. G. LAMB,
V. J. AYRES.

The report was adopted and the secretary was instructed to send a copy to Mayor-elect Arnold of Denver and to the veterinarians of the state to be supplied to their local papers for publication.

(*Note.*—This was done and the result in Denver was that three graduate veterinarians were appointed.)

A letter announcing the marriage of Dr. A. G. Bocker was read by the secretary.

It was moved, seconded and carried that we send a letter of congratulations to the doctor.

A vote of thanks was extended to Mr. Fred P. Johnson for his presence and talk upon the stallion and jack law.

The following names were added to the membership roll: Dr. Ira Watts, Longmont; Dr. I. W. Barstow, Brighton; Dr. T. H. Brady, Lamar; Dr. W. G. Blake, Johnstown.

Dr. A. W. Whitehouse reported favorable progress with the Azoturia investigation started in conjunction with the Veterinary Section of the State Experiment Station.

Dr. Geo. H. Glover made a report of the army legislation committee. All the members of the state are trying to stimulate a furtherance of the army bill now before congress.

Dr. Glover reported that at a meeting of the State Association for the Control of Tuberculosis he, as chairman of a committee on tuberculosis legislation, had outlined a plan which incorporated the following:

The compulsory testing of all cattle for dairy and breeding purposes.

Tuberculous cattle be handled by the Bang system.

All milk from reacting cows must be pasteurized and sold as pasteurized milk from tuberculous cattle.

Competent supervision of the pasteurizing.

The doctor stated that while this was not as stringent as we might hope, yet all dairymen of the State Dairymen's Association he had talked with would work for the bill. It was believed that it would be better to have their co-operation than their violent opposition and to trust to future amendments after taking the first step. . * * *

The subject of prosecuting "quacks" practicing in the state illegally was discussed and the statement made by Dr. Geo. W. Dickey, president of the examining board, that there would be three prosecutions started soon.

THE PAPERS.

Our Stallion and Jack Law was discussed by Mr. Fred P. Johnson, secretary of the Western Live Stock Show and of the Colorado Stock Growers' Association.

Pneumonia as a Result of Smoke-Inhalations was discussed by Dr. Geo. W. Dickey. The doctor reported good results by the use of oxygen in these aggravated cases.

A report of *A Peculiar Disease Among Cattle* was given by Dr. I. W. Barstow.

Castration of Ridglings was given by Dr. A. B. McCapes.*

Monstrosities was discussed by Dr. A. G. Wadleigh.

A visit was made to the College Pathology Museum, where there are over 600 pathology specimens.

Some new instruments (home-made) were demonstrated by Dr. A. A. Hermann.

The following are some interesting items in connection with the doctor's talk:

"I have the honor and pleasure of exhibiting and demonstrating a few crude 'implements' of my own workmanship for use in the pursuit of veterinary science by practitioners like myself who are pinched for coin and need to use ingenuity in making an article which, though clumsy, will serve the purpose of some needy though otherwise expensive appliance. The articles shown are not for sale, nor can I in any way duplicate them for you. My purpose is merely to give you an idea which you may use if you choose to do so, or necessity drives you to making of some sorely needed weapon such as this. Necessity is the mother of

*Appears on page 575 of this issue of the REVIEW.

invention, so I lay claim to no talent except such as you all possess. Thoroughly studying the case at hand and devising some appliance, simple, safe and strong, to aid you, is the best plan and only rule you need.

"The first is a poultice boot (Fig. 1-a, also Fig. 3-a), light, weighing only 12 ounces, durable, the sole being of one-half-inch elk sole leather, hand-sewed and water-proof 20-ounce canvas upper, with all seams waxed. It is sanitary and can be washed at liberty. It is neat, shapes itself to the foot and leg and laces tightly around the leg as a high topped shoe does on a person. The demand for these, in my practice, has been such that I have made all sizes, using as patterns, horseshoes in sizes from 1 to 7. As an accommodating cobbler allowed me to do the sewing, these boots cost me less than 50 cents apiece.

"My next instrument is a steel cast made in halves which were successfully applied to the broken leg of an aged Holstein bull weighing 1,500 pounds (Fig. 1-b, also Fig. 3-b). The fracture involved three of the bones of the knee joint and the large metacarpal bone at about its upper third. The stock was 3-32-inch bessemer sheet steel picked up in a junk pile. After being cut the margins were all beveled and the entire surface perforated like a sieve to permit ventilation. The larger front piece was bulged outward near the top and shaped to accommodate the bulk of the knee. The broken bones were replaced as well as possible, the leg was bound in cotton over which strips of canvas were wound. The cast was then applied and firmly fixed and tightened by strong straps. Subsequent swelling held all fractured bones firmly in place for 28 days. By that time union seemed complete. The bull has been used steadily for service since this treatment.

"The hernia clamp here needs no further comment, as a detailed report of same was printed in an earlier number of the AMERICAN VETERINARY REVIEW, Figure 1-c, also Figure 2-c.

"Sometimes an article offered to the profession by manufacturers is unsuitable or fails to do the service required. Such was my experience with a dental punch which was too heavy, too softly tempered and persistently slipped off the tooth, because its serrated surface was convex instead of flat or concave. For less than the punch cost me I procured a length of drill steel, five-eighths-inch stock, and had made tempered to order a set consisting of one each of bayonet punch (Fig. 2-a), straight punch (Fig. 2-b), straight chisel and angular chisel which serves admirably as a molar separator and elevator. Figure 2-d and c included herein is a regular blacksmith scratch awl I made while

studying forge work, which serves admirably as a probe in my dentistry work.

" This ungainly contrivance is a rectal syringe. See Figure 1-f. I can say in its favor that I did not lose any case of alfalfa impaction this fall and winter and I used the syringe on several cases. Two pieces of brass tubing, one seven-eighth and the enclosed one of half-inch stock; a three-way valve and hose connection; Figure 1-g, an eighth-inch rubber ball with burrs and washers made to fit the pipes, comprise the outfit. Figure 1-h. The ball while collapsible is inserted in the rectum; is filled tightly

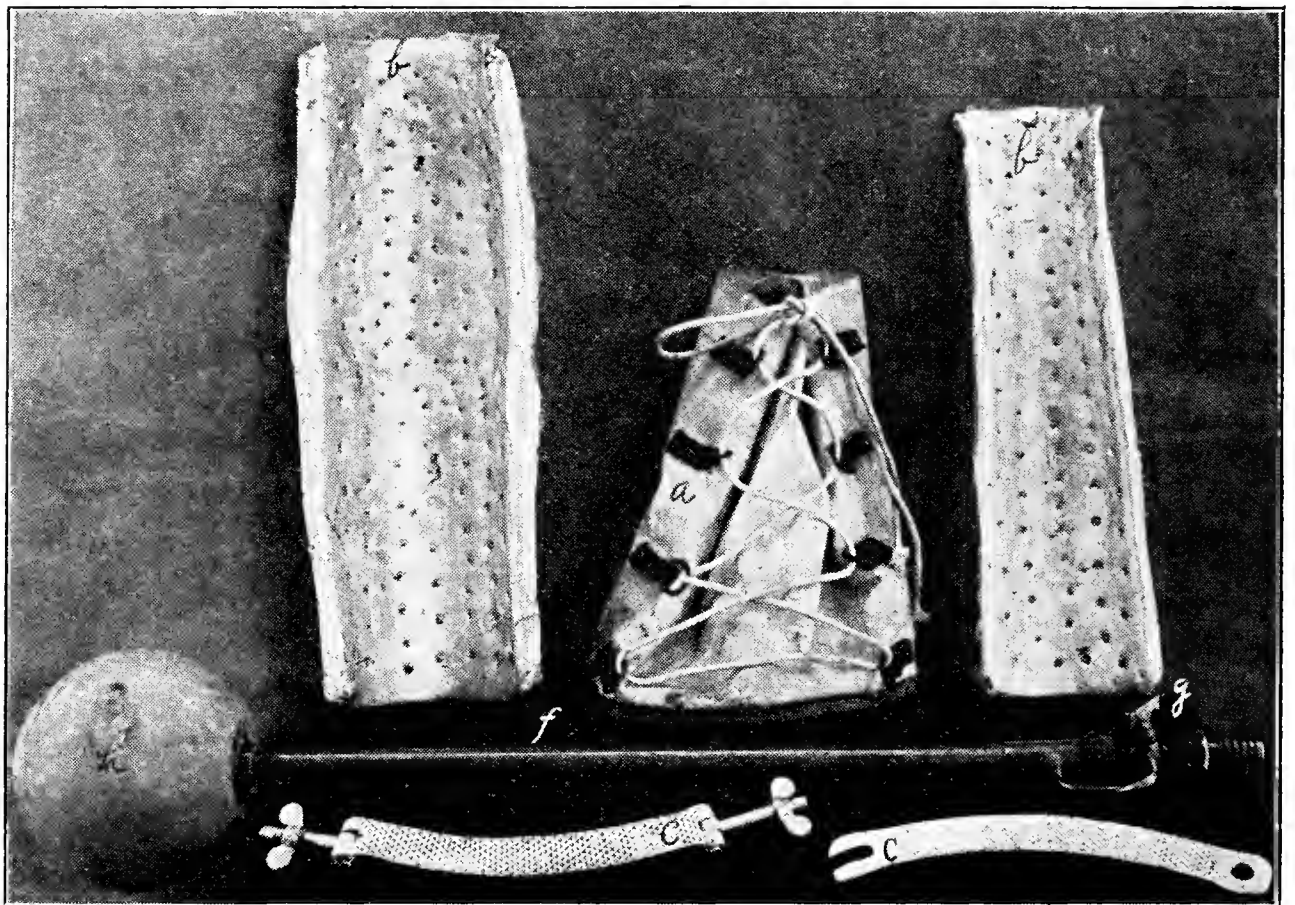


Figure 1. a—Poultice boot. b—Steel cast for fractures. c—Hernial clamps.

with water, after which a turn of the stop cock (g) allows the water to dilate the bowel anterior to the plug. Thus the bowel is dilated from an impacted mass usually lodged in the floating colon (in cases of alfalfa impaction as we have them), and soon the mass is softened and moved by some alkaloidal intestinal evacuant. Later I hope to add a very sensitive pressure gauge to this tip to determine the pressure exerted upon the bowel wall and content, during the patient's straining. By watching the gauge any danger of dilating a bowel beyond its capacity would be eliminated.

“Last but not least, surely not in usefulness and adaptability to all sizes and conditions of horses, is a set of slings (Fig. 3). They are made of canvass belting given gratis by a local miller. The triangles of iron $\frac{3}{8}$ -inch stock pass through pieces of water pipe reinforced with leather tips well sewed (Fig. 3-c). The cost of material was \$9.50 complete with single tree, steel blocks and 50 feet of 4-ply hard twist lariat rope. Horses and cows are supported with equal facility and comfort. Colts are accommodated as easily as heavy draft horses. Being in three separate pieces it is easy to apply to an animal in any position. The main supporting band is only ten inches wide, but has never yet produced any chafing or discomfort (Fig. 3-d), as this part rests upon the sternum peristalsis and respiration is not in the least

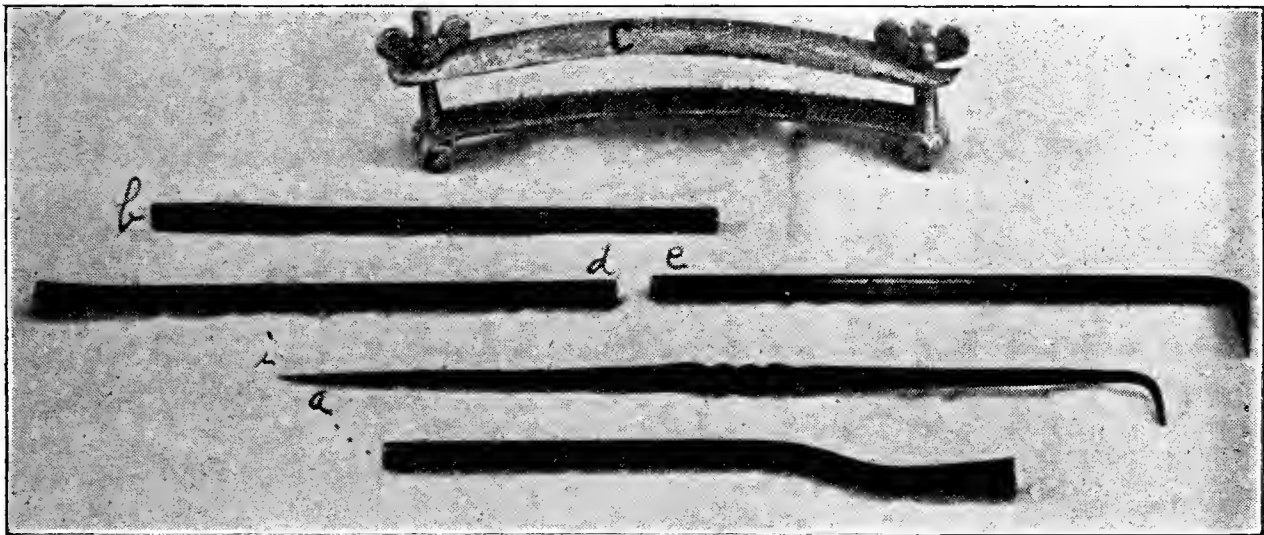


Figure 2. a—Bayonet punch. b—Straight punch. c—Hernia clamp. d—Straight chisel. e—Angular chisel. i—Scratch awl.

hampered. A horse may be raised and held in mid-air for a time without discomfort, or it may be reclined as a dog on its haunches with perfect safety and ease.

THE CLINIC.

Case No. 1.—Mare, roan, 2 years old. Diagnosis: Congenital umbilical hernia. Symptoms: A soft reducible swelling at the umbilicus, about the size of a goose egg. Operator: W. A. Kickland, M. D. General technique: Perfect asepsis was obtained by sterile sheets, sponges, gloves and instruments. Tincture of iodine was used to disinfect the area. Dr. Mayo's method of operating was followed. This is the second case that has been successfully operated upon by the same method in Dr. Kingman's operating room. The operation will be described when sufficient number of cases have been operated upon to assure its practicability.

Case No. 2. Horse, roan, 2 years old. Diagnosis: Monorchid. Operator: Dr. A. B. McCapes.

Dr. McCapes follows a technique that he has developed after a great many years' experience in this kind of work. It is described for the first time in his paper presented at this meeting.*

Case No. 3. Horse, male hermaphrodite, 3 years old.

As Figure 4-a shows there is a well developed penis which protrudes more than a foot when erection is present. This penis

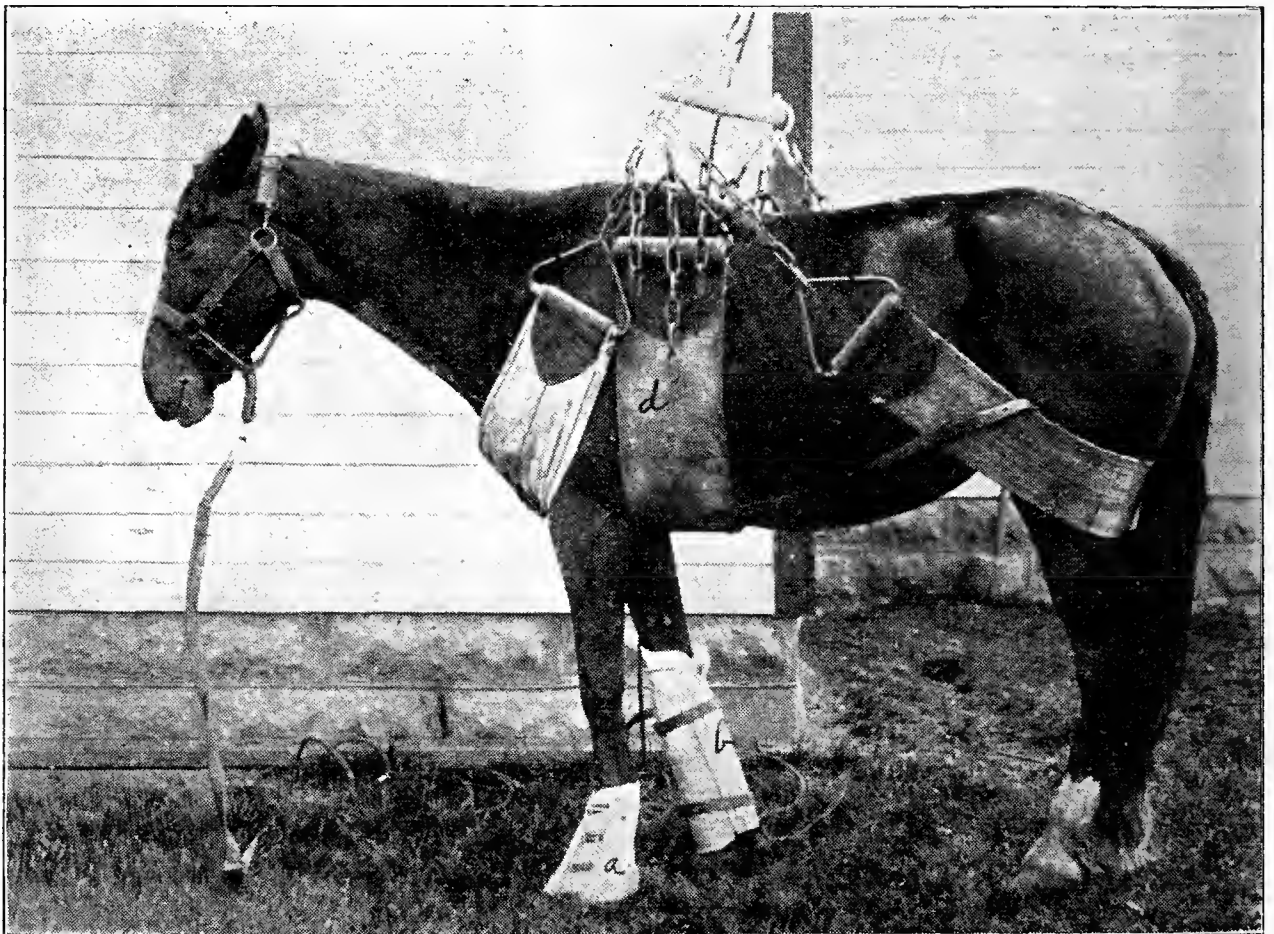


Figure 3. a—Poultice boot applied. b—Steel cast for fracture applied.
c—Triangles. d—Main supporting piece.

is located below the anus or place where the vulvar opening should be. On the raphæ there is a heavy fold of skin, but there was no opening as in a vulva. Two poorly developed testicles were found in the usual place. The mammary glands were fairly well developed.

Case No. 4. Horse, brown, 14 years old. Diagnosis: Monorchid. Operation: Castration.

Operator: Dr. A. W. Whitehouse. The technique is described in the AMERICAN VETERINARY REVIEW of January, 1911.

* Published on page 577 of this issue of the REVIEW.

Horse was given bacterial vaccine, to raise his opsonic index against bacterial invasion, of the pus-producing kind, previous to operation. Chloroform was used as an anesthetic.

Case No. 5. Horse, brown, 6 years old. Diagnosis: Occult side bon.

Symptoms: Supporting leg lameness in right fore leg. Sensitiveness over both lateral cartilages. No enlargement or hardness. Treatment: digital neurectomy recommended.

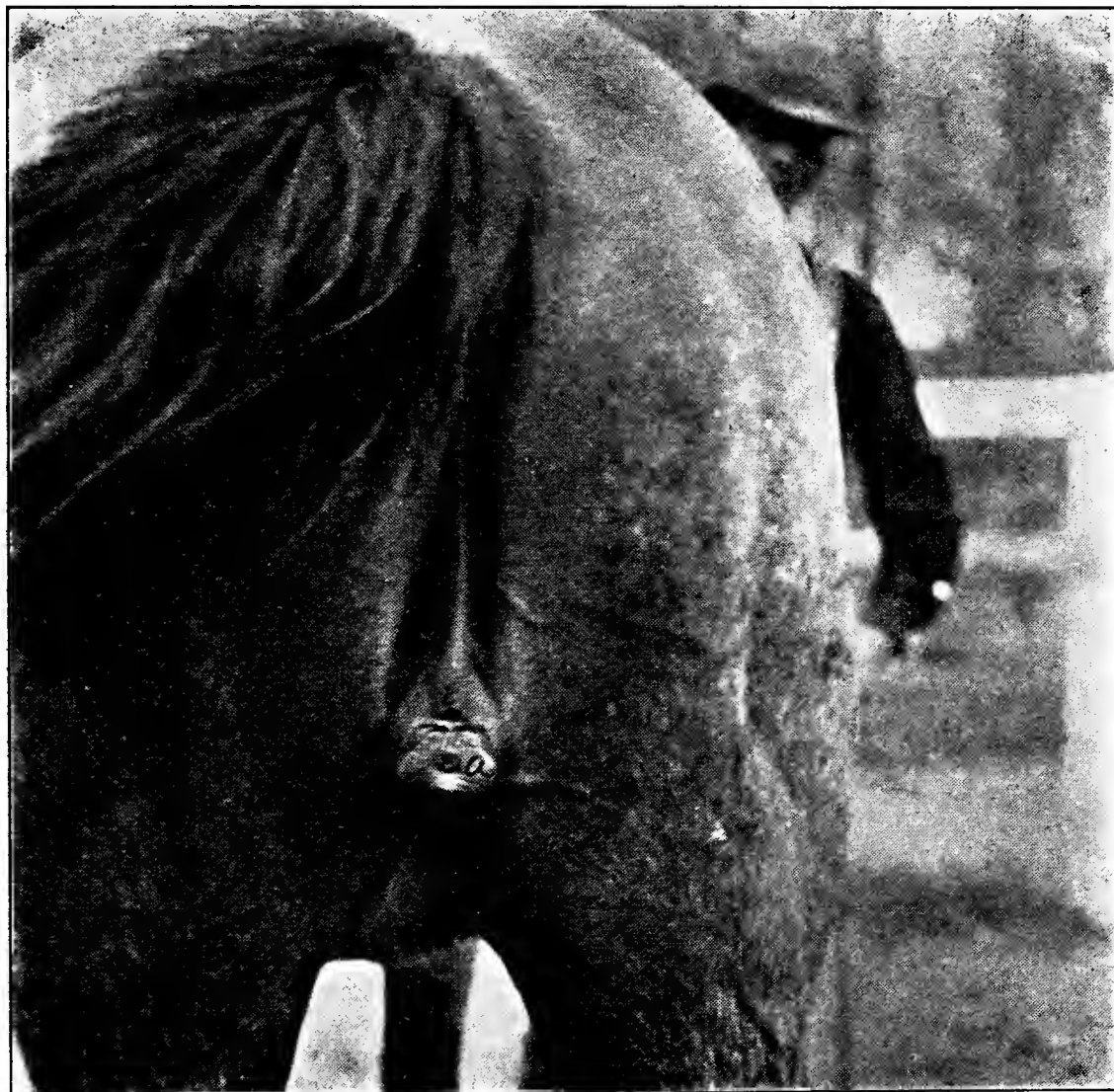


Figure 4. a—Penis. Case No. 3.

Case No. 6. Horse, bay, 8 years old. Diagnosis: Stringhalt. Treatment: Tenotomy of lateral digital extensor. Operator: Dr. P. H. Cottrell.

Case No. 7. Horse, gelding, sorrel, 6 years old. Diagnosis: Chronic thickening of the right ramus of the mandible over the roots of the first and second molars.

Symptoms: Enlargement the size of a man's fist, not sensitive, of two months' standing. Second tooth higher than the others,

but evidently sound. There was a difference of opinion among the practitioners in regard to the treatment. It was thought best to pull the tooth, but when it was found that the tooth was firm and not sensitive the cutters were used in place of extraction. The case will be reported on later.

Case No. 8. Mare, gray, 8 years old. Symptoms: Contraction of brachial and antibrachial fasciæ. See Figure 5. The extensor tendons stood out very tense and rigid. The leg was held in a very stiff and peculiar position.

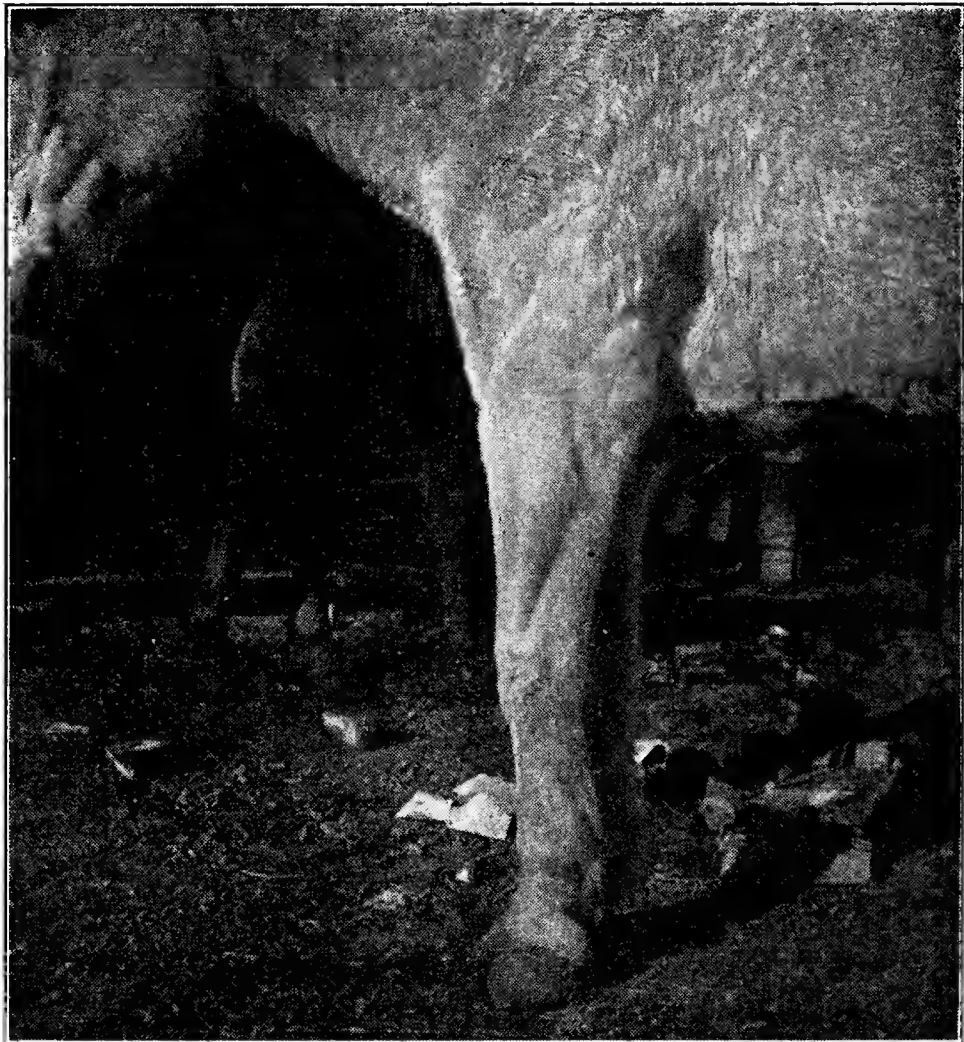


Figure 5. Case No 8.

History: Two years' standing. The strip from the brachial fascia which attaches to the tendon of the biceps was severed with partial relief of the condition. No further treatment was attempted.

Case No. 9. Gelding, bay, 2 years old. Diagnosis: Wire cut over knee. Three months' standing. Treatment: A paste made from zinc oxid, zinc sulphate and lead acetate.

This paste is usually excellent in these cases, but this wound has become a sluggish sore from neglect before being brought to

the hospital. Not doing well on this treatment; after due trial a 1 per cent. Sudan III. in vaseline was later tried and is now being rapidly covered over with epithelium. Many of the dyes have given good results in human practice in indolent wounds. These are Scarlet R, Sudan I., Sudan IV., Sudan G. and others. They deserve further trial.

Figure 6-A illustrates this condition.

Case No. 10. Horse, black, 7 years old. Diagnosis: Influenza.

History: Came in a distance of 40 miles and was taken ill soon after arrival. When first seen at the hospital he had a tempera-



Figure 6. a—The wound. Case No. 9.

ture of 104 degrees Fahrenheit, pulse weak and 50 per minute. Respiration 25 per minute. Conjunctiva very red and everted. Opacity of the cornea of both eyes, sheath and scrotum edematous, legs also infiltrated.

Had been in hospital one week at time of meeting, isolated from other animals and stall locked.

Treatment: Aloes ball, tincture strophanthus one dram, strychnine sulph. one-half grain three times a day. Sheath and scrotum placed in a support and irrigated with warm water. Legs rubbed and bandaged and animal given green feed and walked a

short distance every half day. 1.2000 solution of bi-cyanide of mercury was used as an eye wash several times a day with gratifying results. In three days the corneas cleared to almost normal and the conjunctivæ were free from inflammation.

The horse was dismissed at the end of the meeting.

THE ENTERTAINMENT.

Automobiles met the train at the college station on the first day of the meeting. A visit was made to the U. S. breeding stud to observe the new type of American carriage horse which the government and state are perfecting.

After a ride around the city a luncheon was served at the Northern Hotel.

The veterinary banquet and ball of the Division of Veterinary Medicine of the college was given in the evening of the first day. One hundred and five were present. The members of the state association were guests of the local association.

The visiting ladies were given an auto ride the forenoon of the second day and joined the members at luncheon at the Pathology building at 12 o'clock.

In the afternoon a visit of the campus and buildings was made.

PRESIDENT'S ADDRESS.

Gentlemen: I know that there are members of this association that have more executive ability and could fill this position better than myself, but you have elected me to fill this position and I trust you will give me your hearty support and co-operation and with it I will try and do my best.

This is my first attempt as a presiding officer and I hope you will excuse my many mistakes. In deciding on a subject for this address I was at a loss to select any subject of much importance to the profession, but decided to give a brief history of our association.

While this association is still in its infancy, its accomplishments will show that its members have not been idle all the time, and its members have always been willing to put a shoulder to the wheel and push it along. As an illustration, we have purchased a machine, I say purchased, because, sorry to say, you cannot get any kind of legislation without some remuneration. In other words, we have struggled along until we have a law on the statute books of Colorado that will be a great benefit to ourselves and general public. And it looks like it would stand the test. Now

it is up to the association to enforce it if we expect to realize anything for our efforts.

Our first attempt towards the betterment of our legal conditions was started in 1902-3 when, through the persistent efforts of some of our members, especially Dr. A. B. McCapes, then state veterinarian, we got a law enacted by the general assembly.

While like all inventions there is ever a chance for improvement, so it was with our law governing veterinary medicine.

After it had gone through the mill it did not amount to very much, but it was an incentive to every member of this association to get busy and try and improve it.

On July 15, 1903, this association was organized, with 17 charter members, at the state capitol.

We have 12 of these members enrolled at the present time. Two have gone to the great beyond and three have left the state.

In 1904-5 we were suddenly surprised to find that the non-graduates had started a movement to tear down our little foundation and set back beyond where we started from, but this was met with a determination that we would not be repulsed and we came out victorious.

While this first enactment would not stand the test, it had its effect in starting the public to an understanding what class doctor so and so belonged and the quacks began to lose prestige.

Again in 1906-07 we were fortunate enough to get a law enacted that looked like it would stand the test, but after the race we again found our machinery weak in places and needed some repairs, which have since been made, and now we think that we have a law that will stand the severest test.

We have been victorious in all our combats so far and have gained a fair foothold; now it is up to each and every one of us to put forth every effort to enforce our law, governing the practice of veterinary medicine, and to educate the live stock raisers and owners that it is to their interest to seek the assistance of a man that has a special training in the care and treatment of our dumb animals—our friends—in both health and disease, and not to employ “doc” so and so, whose stock in trade is hot air and sure cure for water colic.

Our membership is about 40, some of which are very active in promoting the welfare of the association and have its interest at heart.

There are several new veterinarians that have entered the state and we hope that they will all become members of this association, as we need representation from all parts of the state.

While our membership is increasing it is not the policy for any one of us to think that some one else can do the work, but it behooves each of us to get busy and see that some prosecutions are started and the results noted, and if there is still a flaw in our machinery, we can get it repaired in the coming legislature, and if it is sound, then every violator, whether he be a graduate or non-graduate, should be made to stand the consequences.

B. F. KAUPP, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The twenty-eighth semi-annual meeting of the Veterinary Medical Association of New Jersey was held at Jersey City July 11, 1912.

The morning was given over to clinic. President T. E. Smith provided an excellent place and the local committee had gathered an abundance of material. Among the operations were quittor operation, castrations, tenotomy, fistulus withers operation, operation for cysts and neurectomy. A number of obscure cases were presented for diagnosis and altogether the clinic was a decided success.

Dinner was served at the Columbian Club, after which Mayor Otto Wittpenn of Jersey City gave the address of welcome.

A short business session was then held.

Four new members were elected: Drs. S. W. Schuppan of Freehold, Chas. C. Schloemer of Hoboken, T. F. O'Dea of Union and Wm. A. Fitzpatrick of Burlington.

The following resolution was adopted:

"Resolved, That the Veterinary Medical Association of New Jersey commends the work of the Bureau of Animal Industry and has full confidence in the manner it is being carried out."

It was arranged to hold a half-day meeting in the fall, at which time there will be an open discussion as to what new legislation towards better public health laws will be supported by the association. The laws as to tuberculosis and other contagious diseases of animals will receive particular attention.

President T. E. Smith was presented with a handsome cane and umbrella as a token of esteem from the Hudson County Practitioners' Club. The presentation was made by Dr. Rufus R. Ramsey.

The literary program was of a very high order and received excellent comment from both members and visitors. Supper was

served at the club house and the literary program was finally completed at 10.30 p. m.

The papers were as follows:

1. "The Veterinarian in Relation to Public Health," by Dr. P. K. Nichols of Staten Island. This paper was an excellent one and a long discussion followed it.

2. "The Relation of the Veterinarian to the Public," by Dr. Harold E. Stearns, Arlington, N. J.

3. "Stumbling," by Dr. James McDonnough, Montclair, N. J.

4. "Principles of Horseshoeing," by Dr. David W. Cochran, New York.

5. "Autotherapy or Curing Disease with Its Own Poisons" by Dr. Chas. H. Duncan, New York.

6. "Diseases of Wild Animals in Confinement" (with lantern slides showing specimens), by Dr. W. Reid Blair, New York.

The following members were present: Drs. Belloff, Gall, McCarter, Loubach, Ramsey, Lindsey, Holdenby, R. E. Mosedale, James Mosedale, Harkes, J. T. Glennon, Hurley, J. Payne Lowe, Harrison, Gray, McDonnough, J. B. Hopper, A. G. Hopper, Stearns, Schloemer, O'Dea, Shuppen, Fitzpatrick, Paulin E. Matthews, Hendren, J. Mitchell, Dustin, Bair, Halliday, A. W. Smith, R. Dixon, Budd, Geo. W. Smith, T. E. Smith and Loblein.

Visitors: Dr. Runyon of Stelton, N. J., Millenberger of Philadelphia, Drs. Ellis, DeVine, Mangen, Cochran, Gill, McLaughlin, Fitch and W. Reid Blair of New York City, Drs. Ackerman and Fitch of Brooklyn, Dr. P. K. Nichols of Staten Island, Drs. Miller and Bruce Blair of Jersey City and Dr. Hossman of Hoboken and Mayor Otto Wittpenn of Jersey City.

E. L. LOBLEIN, Secretary.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The third annual meeting of this association was held at the Vanderbilt Hotel, Syracuse, N. Y., on June 27, 1912, with the following members present: W. G. Hollingworth, H. A. Turner, W. B. Switzer, F. E. York, J. A. Pendergast, J. M. Currie, L. G. Moore, D. C. Papworth, J. S. Elliott, E. E. Cole, A. J. Tuxill, E. E. Dooling, Wilson Huff, George Gowland, Frank Morrow, A.

E. Merry, W. S. Corlis, W. M. Pendergast, E. D. Hayden, C. R. Baldwin, R. M. Weightman, J. C. Stevens, J. H. Stack, I. L. Buchanan, Earl W. Fitch, George D. Burton. Applications for membership were presented by Henry Cady, of Gloversville, and Wm. E. J. Evans, both being duly admitted. The association had as its guests Dr. Frank J. Loomis, meat and milk inspector of Watertown, N. Y.; Dr. A. George Tegg, of the Genesee Valley Veterinary Medical Society, Rochester, N. Y.; Mr. F. J. Switzer and Mr. C. Russell Guile, of Fulton, N. Y.

The prosecuting committee appointed at the last meeting for the purpose of working against the illegal practice of the profession reported progress. Mr. Merritt A. Switzer, of Oswego, N. Y., attorney for the association, was present and outlined the work done during the past year. Several illegal practitioners have already been forced to desist and active measures were authorized for the coming year to the end that the work may be carried on very much more effectively during the coming year. The prosecuting committee appointed at the last meeting was continued in office.

The matter of the proper and scientific inspection of meat and milk and of the conditions under which they are handled was discussed at considerable length. Our guest, Dr. Loomis, gave a very interesting talk on the methods used in his work, which was supplemented by Dr. Tegg, of Rochester, by Dr. Dooling, Dr. Huff and others. It was the unanimous vote of the members present that this society be placed on record as favoring a much more general and thorough inspection along these lines.

Dr. W. S. Corlis spoke very interestingly on "Hog Cholera" and from his experience in these matters answered many questions in the discussion which followed. Another instructive paper was read by Dr. I. L. Buchanan on "Gastric Indigestion." The president's address, delivered by Dr. Hollingworth, was extremely helpful.

The officers elected for the ensuing year were, as follows: President, Dr. Jas. A. Pendergast; Vice-President, Dr. R. M. Weightman; Secretary-Treasurer, Dr. W. B. Switzer; Board of Censors, Dr. E. E. Dooling, Dr. I. L. Buchanan, Dr. Frank Morrow, Dr. L. G. Moore, Dr. J. M. Currie and Dr. J. S. Elliott.

As a preliminary to the meeting a clinic was held at the infirmary of Dr. H. A. Turner, 812 South Salina Street, Syracuse. Dr. Hollingworth, president of the association, assisted by Dr. W. S. Corlis and others, operated on the following cases, among

others: Quittor, median neurectomy for ring-bone, sciatic neurectomy for spavin, and two cases of fistulous withers. The success of this feature is due largely to the efforts of Dr. Turner in securing the cases and to his courtesy in welcoming the members to his well-appointed infirmary. This was the first instance of the use of the clinic by this association, and the result was very satisfactory in point of interest and in general helpfulness and sociability.

Lunch was served during the course of the clinic at the infirmary of Dr. Turner. Following the close of the meeting the members set down to an enjoyable banquet at the Vanderbilt Hotel.

This meeting of the association proved to be the best yet held and fully justified the efforts of its officers and members in arranging to meet thus in consultation and mutual service. With the growth in numbers and with the experience of years, even greater things are to be expected for the future.

W. B. SWITZER, Secretary.

LAST WORD FROM SECRETARY MARSHALL: "I believe we are going to have an unusually good meeting."

FOURTEEN veterinarians from New York, including the president of the New York State Veterinary Medical Society, were present at the recent congress of New Jersey veterinarians, and took an active part in the programme enacted.

PRESIDENT DE VINE, of the New York State Veterinary Medical Society, received a high tribute from President Smith for what he had been able to do for the profession in New Jersey, as the result of an address made by Dr. De Vine before a joint meeting of the State Agricultural Society and the Tuberculosis Commission at the New Jersey capital last winter.

NOT CROWDING OUT HORSES, HARNESS MAN SAYS.—The horse is not being replaced by the automobile, said Charles Schell, president of the National Harness Manufacturers' Association, in opening the twenty-sixth annual convention of the association at the Hotel Victoria.

There are more horses in this country than ever, and they are commanding just as high prices as formerly in the market, according to Mr. Schell. There is just as great a demand for harness, and the manufacturers have sold more harness during the last year than ever before.—(*New York Tribune*.)

NEWS AND ITEMS.

LAST WORD FROM PRESIDENT BRENTON: "Have just returned late tonight from a trip to the northern part of our state. From present indications we are to have a rousing good meeting and I am hopeful of having a record-breaking attendance."

DR. J. N. SHOEMAKER has accepted the position of house surgeon in the veterinary school of Columbus University, where he will be glad to hear from his friends and former college associates.

GOSHEN FULL OF TROTTERS: Dr. John F. De Vine of Goshen, N. Y., reports that that old trotting horse center is literally filled with trotters, training for the meet there and for the trot at Monroe.

DR. CHAS. H. JEWELL has been transferred from the Sixth Field Artillery to the Fifth Field Artillery, relieved from the mounted service school and stationed at Fort Sill, Okla. Dr. Winfred J. Stokes takes Dr. Jewell's place in the mounted service school.

DR. NELSON BECOMES A BENEDICT: Dr. C. A. Nelson, Brainerd, Minn., was united in marriage to Miss Winnifred Robertson, of St. Cloud, on June 27 last. Dr. Nelson exercised his usual good judgment in his selection of a bride that characterizes his action in other things, and we congratulate both the young people and wish them all the joy and happiness they deserve. We hope Dr. Nelson will start right and bring Mrs. Nelson to the A. V. M. A. convention at Indianapolis this month.

DR. MUNCE GOES ABROAD: Dr. T. E. Munce, Deputy State Veterinarian of Pennsylvania, and Mrs. Munce sailed July 13 for a trip abroad. They will tour the British Isles, France, Belgium, Holland and a portion of Germany.

At Edinburgh, under Professors Leighton and Doughlas, special instruction will be taken by Dr. Munce in reference to meat inspection. Investigation will be made concerning the regulations and methods used in France, Holland and Germany where municipal abattoirs and meat inspection have for years been maintained. The knowledge to be gained by these investigations should prove helpful when applied to the Pennsylvania State Meat Hygiene Service.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Week Aug. 26,'12	Indianapolis..	C. J. Marshall, Philadelphia
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médéciale Veterinaire Fran- çaise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha ..	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	Jan., 1913.....	Denver	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	.....	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	.....	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	July 9, 1912. ...	Springfield ...	L. A. Merillat, Chicago.
Indiana Veterinary Association..	Jan. 15-16, 1913..	Indianapolis ..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	.....	.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n... ..	January, 1913...	Topeka.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Lake Erie V. M. Association.....	Oct 8-12, 1912...	Lorain, O....	Phil. H. Fulstow, Norwalk, O.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	July, 1912.....	Portland.....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young's Bost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n....	July 10-11, 1912.	Minneapolis...	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n...	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n	July 29-30, 1912..	Marshall	S. Stewart, Kansas City.
Montana State V. M. A.....	Jan. 29-30, 1912.	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912....	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	Jy. 30-31, Aug. 1.	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 1912	Raleigh.....	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	Fargo.....	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A....	Feb. and Nov...	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	September, 1912.	.....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	June 19, 1912....	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn....	.....	Philadelphia..	B. T. Woodward, Wash'n, D. C
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n .....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	M. Page Smith, Wash., D. C
Vet. Med. Ass'n of N. J.....	Jan., 1913	Jersey City...	E. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	E. L. Loblein, New Brunswick.
Veterinary Practitioners' Club...	Monthly.....	Jersey City ...	R. S. MacKellar, N. Y. City
Virginia State V. M. Ass'n	July 11, 1912....	Newport News	A. F. Mount, Jersey City.
Washington State Col. V. M. A..	1st & 3d Fri. Eve.	Pullman.....	Geo. C. Faville, Norfolk.
Washington State V. M. A.....	Jan. 9-10, 1913..	Wenatchee....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Carl Cozier, Bellingham
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville....	Benjamin Gunner, Sewickley
York Co. (Pa.) V. M. A.....	June 4, 1912....	York.....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

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IF YOU WANT TO SEE A DISPLAY OF VETERINARY INSTRUMENTS, write the Frank S. Betz Co. for their catalogue. You will find their address on page 25 (adv. dept.) of this issue of the REVIEW.

NUCLEIN IS AN IMPORTANT ADJUNCT in the treatment of all debilitating diseases in horses and dogs. In the latter, it is particularly valuable in distemper in connection with other medicaments. See literature on page 19 (adv. dept.), together with other specialties of the ABBOTT ALKALOIDAL COMPANY.

CONTROL YOUR SHIPPING FEVER by promptly administering the proper vaccine. Write Dr. W. L. Beebe, Director of the BEEBE BIOLOGICAL LABORATORIES for particulars in regard to its administration prophylactically and therapeutically. See address on page 29 (adv. dept.) of this issue.

EVEN IN THE SUMMER TIME the streets of the large cities are slippery, due to the universal use of asphalt pavement, and horses must be shod to meet the street conditions. The "air-cushion" pad manufactured by the REVERE RUBBER Co. meets the requirements better than anything else. See announcement on page 29 (adv. dept.) of this issue. Mention the REVIEW in writing.

AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1912.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, JULY 15, 1912.

CANINE PIROPLASMOSIS.—In the first number of the 17th volume of the *Archives of Scientific Biologies*, published by the Imperial Institute of Experimental Medicine at St. Petersburg, Drs. N. N. Navrotsky and P. V. Bebensky have published the results of a series of experiments that they have carried on in dogs, in relation to that disease; and which as a contribution to its study present facts of great interest from various points of view, which were the objects of their experiments; viz.: 1. the clinical appearance of the disease; 2. the condition of the blood and that of the urine; 3. the anatomo-pathologic lesions, and, finally, 4. the study of the virus.

I will briefly consider the principal points of the first part of their studies, on account of its special interest from the practical point of view, viz.: *The Clinical aspect*.

This varies according to the type of the disease, which may be acute, sub-acute or chronic.

The acute form can be divided, as presenting four stages, the first of which may be called that of *incubation*, and lasts ordinarily between two and five days, although it may also vary according to the susceptibility of the animals. In this stage there is general dullness, flaccidity of the muscles, diminution of appetite and thirst. The second stage begins with the elevation of

the temperature and the appearance of the pirosmoses in the blood. It lasts between two and four days. The temperature sometimes goes as high as 41° C. This and the presence of the parasites, with an acceleration of the pulse, even to 140 per minute, rapid jerky respiration, loss of flesh, anæmic mucous membranes, constitute the manifestations of this second stage which is characterized as belonging to piroplasmosis, only by the presence of the parasites.

The third stage, which is that of the acme of the disease, lasts from two to four days. In the animals experimented upon, the temperature dropped to normal or even becomes sub-normal. The respiration is accelerated, cardiac palpitations are very strong, the animal is very weak, unable to stand up, the coat is rough, the tongue dry and saburral. The urine is scarce, dark and muddy. There is rhinorrhea and abundant foetid diarrhoea. The conjunctiva is congested and icteric. There is sometimes abundant flow of tears at the eyes. The fecal matters are liquid, yellow and very fetid. The blood contains piroplasms in about the same quantity as in the second stage.

The duration of the fourth stage varies and depends on the form of the disease. It is characterized by the following symptoms: Dropping of the temperature ($36-34^{\circ}$ C.), weak pulse, 50-40, deep laborious breathing. Cardiac beatings weak. Great weakness of the animal. Eyes dull, dirty with purulent crusts at the angles, mucous membranes are more or less icteric in color. Greenish discharge escapes from the nose. Thick bloody mucus from the mouth. Feces are liquid, fetid and reddish. Urine, which gradually diminishes until anuria is present, changes coloration from yellow to that of dark brown beer. Feces and nasal discharge become bloody and finally death takes place, after an illness of from five to eight days.

* * *

The picture just described, of the dogs used in experiments, is the form of the natural disease; it is the most characteristic and is called acute because of the severity of the symptoms, of the

ordinary mode of development of the various stages and also because of the rapidity with which the affection progresses.

But if invariably this acute form of canine piroplasmosis ends in death, there are besides two other forms, which the Russian experimenters call sub-acute and chronic.

The characteristic of the first is its atypic progress. The dogs present an identical picture as far as the march of the disease, but survive to the fourth period and seem to return entirely to complete health. Then after a length of time varying between two and ten days, relapse takes place with the symptoms of the second stage, in which the hyperthermy and the presence of the piroplasms in the blood form the principal signs. The other manifestations are less marked. The relapse may end in death or again be followed by a second or a third, when, although the symptoms become less and less marked, fatal termination is nevertheless the result. The average duration of each of these relapses varies between three and four days.

In chronic piroplasmose, the various stages are better defined than in the acute form. The duration of the febrile stage is short in the second and longer in the third stage. In the fourth stage, while the symptoms are as violent as in the acute form, death does not take place and the animal, gradually recovering, may survive. Later the animal affected with chronic piroplasmosis presents a series of exacerbation, separated from each other by periods of rest more or less distinct.

Of all these recidive manifestations the first is generally the most serious. The others have reduced symptoms; finally they also disappear and the animal seems to return to its normal condition. The parasites are found in the blood of the two or three first relapses, but always in reduced number.

The absence of recidive is no proof of a perfect recovery of the animal. The blood of chronic cases which had not had any recidive for several successive months, has given positive results when injected in other animals.

The difference which exists between these two last forms of piroplasmosis is principally in the greater number of access and

in the fact that chronic subjects recover, *clinically* speaking, and may survive more than one year and a half in the Russian experiments.

* * *

In connection with the above clinical demonstration, I find in the *Revue Générale* an article from Mr. Naudin, who has had a very large opportunity of observing canine piroplasmosis, which was confirmed in the diagnosis by the microscopic examination of the blood. Interesting remarks are published from these observations concerning the symptoms, the diagnosis and the treatment.

The hyperthermy and the hemoglobinuria, according to the writer, are not always present, although when there is jaundice the hemoglobinuria is generally always the rule. There is an abnormal sensibility of the spleen, on pressure in the left hypochondriac region. In all the cases then, the urine contains albumin. For Navrotsky and Bebensky, albumin, sugar and blood are absent from the urine in the first stage of the disease. But afterwards albumin is always present.

As complications, Naudin mentions ulcerative stomatitis and gangrene of the tongue. When the diagnosis is uncertain because of the absence of ticks on the dog or because hemoglobinuria being absent, three symptoms which are constant, help to make a diagnosis, viz.: the pale color of the mucus, the splenic soreness and albuminuria. Microscopic examination of the blood confirms it.

As treatment after having tried with more or less success all the classical forms of massive injections of salted water, calomel, arsenic, iodo-iodurated solution, etc., calcium chloride was resorted to, in doses of 3 grammes daily, until the albumin has disappeared from the urine. The diuretic action of the chloride seemed to give excellent results.

* * *

FUMES OF IODINE IN LOCAL THERAPEUTY. *La Presse Medicale* has lately called the attention of its readers to the im-

portant demonstration made by a celebrated surgeon, Dr. P. Louge, in the use of vapors of iodine in local therapeutys, which he describes under the qualification of "*Enfumage iode*" and which consists in the local application of the fumes of iodine, at the time of their formation, *fumes which are obtained instantaneously by the simple heating of iodoform powder of good quality.*

Round the end of a directory a small ball of wadding is rolled moderately snug and dipped into iodoform powder. With a match, or any other light, the wadding is lighted and in a few moments, while it burns, a thick cloud of handsome vapors, purple-amethyst color, rolled upwards. They are rising vapors of iodine mixed with a small quantity of iohydric acid, fine penetrating, active and powerfully bactericid, which can be applied on any part of the body with a therapeutic object. These fumes first rise in the air, but in cooling off, they soon drop, become brown-purplish in color and are deposited as small crystals, real sublimation of the iodine. The vapors thus produced in great quantity have the inconvenience of giving rise to strong, acrid odor and of acting on steel and nicked objects which then are quickly injured.

The use of the little wadding pad is the simplest manner to produce the vapors. But the "*enfumage iode*" can be employed in other ways, the "*external*," which answers for the surface of the body; the "*internal*" is applied for cysts, abscesses, etc., and a third indication for "cavities," the vagina or fistulous tracts.

There are several manners described by Dr. Louge besides the one mentioned, the burning of a ball of wadding covered with iodoform, held with a directory or pair of forceps.

Again the vapors can be produced in a glass jar with double glass tubes. One to be connected with a rubber ball to blow air in and the other through which the iodine is directed on the proper region. A small quantity of iodoform is placed in the jar, which is held near a lamp, only sufficiently to obtain the formation of the fumes.

Another mode is to resort to the thermocautery. The parts

which are to be submitted to the fumes of iodine are dusted with iodoform and the point of the thermo is brought near it so that the rising of the iodine fumes is easily produced. This last method is one which might be advantageously resorted to in veterinary practice.

The therapeutic indications of the use of fumes of iodine are quite numerous, and generally speaking they may be considered as the same where iodine in its various forms ought to be applied: either as *counter irritant*, alone or combined with the application of points of cauterization, as *antiphlogistic*, as *alterative*, in scrofulous swellings, as *antiseptic*, as *disinfecting agents*.

In human medicine the method has already been advantageously employed in furuncles, anthrax, chronic wounds and simple ulcers, ichorous, in cutaneous, glandular, or scrofulous lesions, in osteo-myelitis or bony caries, in oto-rhinology, old auricular affections, sinusitis. Without having specific qualities, it brings wounds to more healthy, cicatrizing progress. It has also been used with success under a different form, viz.: by the aspiration of the fumes into a glass syringe when it has been possible, then to inject articular cavities and treat severe synositis. In gynecology and also in dermatology the method has given good results.

* * *

Local therapeutry with fumes of iodine is only entering in the domain of surgery and many must be the cases where it will be applied and their records be made public before it has passed the experimental state. Let us wait. But at the same time let us now put on record the experiments that were reported lately in the *Revue de Pathologie Comparée* by Mr. Lepinay, a veterinarian, and Dr. J. Chalut.

These gentlemen have made of the method daily applications in their practice. Recent wounds were treated without being obliged to resort to the application of a dressing, which they consider an advantage. They recommend that the fumes be used in

infected wounds, while then the tincture cannot. In laparotomy, they used it to protect from infection the stump of an amputated uterus. In ulcers, in some cases of fistulas, rebellious to all treatment, as in one case following an abscess which had been treated for two months before and which was closed in ten days after free incision, and a small quantity of iodoform treated with the thermo cautery. One case of osteitis of the humerus is also reported as improved. They also tried it in some forms of cancer, in auricular catarrh and in some specific skin diseases.

This method of application is certainly too recent to be fully appreciated, but from what has been said of it and of the results obtained in humans, and in veterinary medicine, I thought it of sufficient value to deserve the attention of the readers of the REVIEW.

* * *

INTERMITTENT LAMENESS.—Does intermittent lameness of the hind quarters, due to the obstruction of some of the arteries of that part of the body, to thrombosis of the posterior aorta, the iliacs and their branches, that lameness which was observed by Bouley, Jr., in 1831, then by Gurlt in 1838, Herting in 1843, and which Goubaux found so common that he said it existed in more than 5 per cent. of the subjects he used for his anatomical works, and which after being noticed by many observers, finally came down to us with its successive series of symptoms, always the same in their appearance: does, in other words, the *peripheric intermittent lameness* by *ischemia* belong essentially or at least more particularly to solipeds—leaving aside the extremely rare similar cases that have been recorded in cattle, which, according to Cadéac, have been observed once by Haas in Germany, three times by Gualducci in Italy and once by Fordic in England?

The symptomatology of this affection is so characteristic, its mode of development, the nature of its manifestations are all so specific, that the diagnosis is perhaps almost one of the easiest upon which a practitioner has to decide. Indeed and for that

reason as soon as the history of a patient is heard and is accompanied by the detection of its intermittence with its spells of remittance and aggravation, by its gradual but sudden apparition by work, followed by its disappearance with rest, by the excruciating pain which accompanies it, by the profuse perspiration over the anterior part of the body, with the cold manifested over the limbs where the circulation is deficient, the loss of pulsation on the arteries of the affected parts, the expressive sufferings of the countenance, etc., etc., all those tell rapidly of the diagnosis, which is finally positively established by a rectal examination allowing the exploration of the principal seat of the disease, the posterior aorta, and reveals also the cause, viz.: the reduced or prevented circulation, by the presence of a thrombus, of various size and extent in the main blood vessel supplying the region, and also in many of its ramifications, obstructing more or less the lumen of the vessel and interfering with the circulation, thrombus resulting from the obliterating endo-arteritis, whatever may have been the original cause of the inflammation of the blood vessel.

Such is in brief *intermittent peripheral lameness by ischemia*, that which we all know and that has been observed in the large species of our domestic animals.

But to answer the question, whether those are the only ones that are affected with it, Dr. V. Ball, professor at the Lyon School, has recently published in the *Journal de Zootechnie* the history of one case in a dog.

It was a nine-year-old slut, which since a month had exhibited some difficulty in walking. She was stiff in her hindquarters. Soon the walking became more difficult, and the animal dropped down on her hind legs. After a few moments of rest, she was able to renew her promenade; soon to drop down again. Finally the condition grew so bad (the slut becoming almost paraplegic) that she was brought to the doctor for treatment. She died after a few days. The lesions were concisely as follows: Thrombosis of the anterior aorta, complete obliteration of the abdominal aorta and of the terminal portion of the thoracic, the two external iliacs are entirely obliterated, the internal iliacs also, but less exten-

sively. The right heart was dilated. The mitral valve showed lesions of vegetations of chronic endocarditis. At first, Dr. Ball thought this slut had chronic atheromatous aortitis, but careful examination failed him to detect any truly atheromatous lesion. There were more lesions of chronic aortitis, of arterio-sclerosis or perhaps the slut was only in the first stage of atheromatous degeneration. At any rate it was a plain case of *ischemic intermittent lameness*.

* * *

And now a glance in comparative pathology. I extract this from a lecture of Prof. Dejerine, as I think the connections relating to the disease under consideration are quite interesting.

A woman, 37 years old, of healthy family, and having herself always been healthy, became ailing. Her troubles go back several years. Very quick and active, she noticed at a certain time that her left leg was getting weak. It got tired quicker than the right. That left leg was heavier and after walking a certain time she was obliged to stop. A few moments of rest were sufficient for her to regain her suppleness and easy motion, which she kept for a time, until after another little distance, some 200 or 300 yards, the same condition obliged her to stop again. Lately the same symptoms have increased and extended to the right leg. They are indeed such that they interfere very much with her general condition. She can walk normally for a while, but soon has to give it up; she must sit down for a few minutes, after which she can resume her exercise.

And Prof. Dejerine says: "In reality, in this instance only one diagnosis is possible, as there is only one disease that can produce exactly these symptoms; it is that of peripheric intermittent lameness, due to obliterating arteritis of the lower extremities, similar to that observed in horses."

How interesting is this connection of a disease observed in such different species of living beings, described first by veterinarians in large domestic animals, then in man by Charcot in

1859 and finally in dogs by Dr. Ball. What a strong link in the chain of comparative pathology.

The case of Prof. Dejerine, however, was of another nature, and although the first of its manifestations had justified the diagnosis, it was modified into that of *intermittent spinal claudication* on account of specific nervous symptoms due to lesions of the spinal cord, and which, on account of their specificity, are not detected in animals. According to this, human beings may manifest intermittent peripheric lameness, but animals cannot have intermittent spinal claudication.

* * *

WILLIAMS' OPERATION FOR ROARING.—When Prof. Williams came to England to demonstrate his operation for roaring, he certainly had made up his mind that it was there, that it could be tested more extensively in its results, it being an admitted opinion that in England the number of roarers was larger than anywhere else. This opinion needed a statistical proof, and this has been given to a certain extent by a communication of the *Veterinary Journal*, where Prof. Hobday has stated that since "Dr. Williams came to England he had operated upon more than 520 horses." It is doubtful if any other practitioner can make a similar claim.

In this article of Prof. Hobday, however, the object was not to give the number of horses upon which the operation had been performed, but to answer the important question of the results and to show that if this operation was beneficial, it would remain permanently so. And then a list of over 100 of the cases operated is given, showing the date of the operation, the condition of the horses before operated, the result on first trial, and then the result after a later period, varying between 18 months to 2½ years. Of these 100 cases, 55 are quoted as excellent, 45 only as satisfactory, but yet with these last, it seems by the reading of the notes relating to them, that they might just as well be considered also excellent as well as the other 55.

With the recent mode of operation perhaps the results will be still better. Good results for the horses, no doubt excellent and satisfactory to Prof. Hobday, and of great honor to our esteemed friend Williams.

But there are still some points which demand to be carefully considered and among the veterinarians who have performed the operation in England and given the profession the benefit of their experience and of their observation, Prof. J. J. O'Connor, of the Dublin Veterinary College, occupies a first rank. In a recent article in the *Veterinary Record*, he relates one case which suggested to him an addition in the *modus operandi* of the operation and which came to his mind by the observation of a special case.

Calling first the attention to the fact that on opening the larynx of a living or dead animal which has been operated for roaring, one will observe the deformity caused by the left arytenoid cartilage projecting towards the lumen of the larynx, although the laryngeal ventricles have been completely obliterated. And again, that he will also notice that this arytenoid is quite movable and may yet vibrate and create a noise, perhaps not so strong, but still similar to that in the case of a roarer not operated upon. Prof. O'Connor relates that a hunter was brought to him for the roaring operation. The hunter was recognized as one which had been operated already two years previous. The skin being shaved, showed the cicatrix. The larynx was open, both ventricles were found obliterated, but the left arytenoid was movable and decidedly interfering with the lumen of the larynx and of course with the respiration. To remedy this, the professor suggests: "In addition to the stripping of the ventricle, to remove a strip of mucous membrane from the outer lateral aspect of the arytenoid, thus making a wound which in cicatrizing will draw the arytenoid away from the median line and fix it to the thyroid, thus making it less movable and preventing its coming in the way of the inspired air." Horses operated which would seem to have a poor or a bad result might be improved by the proper application of this suggestion.

* * *

A CORRECTION.—In the Chronicle for June, I gave the last information I had in relation to the 150th anniversary of the foundation of the Veterinary Schools, but since the date of that ceremony has been changed and postponed to the end of October, the 26th. Special official notices and invitations, we are told, will be sent to professional journals, to veterinarians and to the different schools of Europe and other countries.

We shall at the proper time give our American confrères as complete a report of the ceremonies as we will be able to collect.

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PAMPHLETS AND JOURNALS ACKNOWLEDGED.

Circular 198—Bureau of Animal Industry. *The bacterium of contagious abortion of cattle demonstrated to occur in milk.*

The Cape Province Agricultural Journal. One of the first number. A quite large issue, handsomely illustrated with plates of animals, prizes, shows, and which—among articles of general interest—has also one on Veterinary Notes by an anonymous F.R.C.V.S.

The Agricultural Journal of the Union of South Africa, May number, contains the continuation of the “Anatomy and Physiology of the Ostrich,” by Prof. Duerden, and an article from Dr. A. Theiler on “Rickets, Osteomalacia, Osteoporosis and Pica,” which will be analyzed later.

The proceedings of the *Indiana Veterinary Medical Association*. Meeting of January last.

The Cornell Veterinarian, June issue—with an article on “Catalase and Reductase Tests,” one on “Veterinary Curriculum” and one on the “Veterinarian in Sanitary Milk Production.”

Veterinary Notes, Parke, Davis & Co., June issue.

Chicago Veterinary College, Bulletin of March, 1912.

A. L.

CANADIAN GOVERNMENT APPOINTS SUCCESSOR TO DR. RUTHERFORD.

Dr. Fred Torrance, Winnipeg, on the recommendation of the Minister of Agriculture, has been appointed Veterinary Director General to succeed Dr. J. G. Rutherford, who retired from that position, and that of Live Stock Commissioner, some months ago. Dr. Rutherford had done an immense amount of work in the control and eradication of infectious and contagious diseases of animals, had rendered the Dominion of Canada an incalculable service in public health matters generally, and had organized and set in motion an immense sanitary system, that the government realized it would require a man of more than ordinary ability to continue to operate to the best interests of the government. Hon. Martin Burrell, who had the matter under consideration, realized that some of the large questions affecting the national health, like that of bovine tuberculosis, yet remained to be dealt with, and that it was essential to secure a man whose scientific training and executive ability would enable him to handle these problems in the manner that their importance demands. Such a man has been found in the person of Dr. Fred Torrance, so well known both in the United States and Canada, that it is scarcely necessary to add any comment here, although a word as to Dr. Torrance's peculiar fitness for the position might not be out of order. Dr. Torrance, after obtaining his B. A. at McGill University, spent a year at the Ontario Agricultural College, and then the Veterinary College, taking the V.S. and finally D.V.S. from the School of Comparative Medicine at McGill University. The doctor, thus equipped with knowledge and degrees, went to Brandon, Manitoba, where he engaged in general practice, and at the same time held the position of district veterinarian under the provincial government. In 1897 he moved to Winnipeg, where he became actively engaged in general practice and won the distinction of being one of the largest and most successful veterinary practitioners in Canada. When the Agricultural College of Manitoba was organized, he was appointed Lecturer in Veterinary Science, and

afterward was made professor, a position which he has held up to the present time. He has always taken an active interest in his profession, was one of the first members of the Veterinary Association of Manitoba, having been its secretary-treasurer and registrar for the past ten years. He is a member of the International Commission on Bovine Tuberculosis, and during the present year Dr. Torrance was entrusted by the Minister of Agriculture with an important mission to England, to make an investigation into epizootic abortion of cattle, consulting while there with Sir John McFadyean and Dr. Stewart Stockman. For the present Dr. Torrance will act as Live Stock Commissioner as well as Veterinary Director General, as his predecessor did, but it is the intent of the Minister of Agriculture to separate the two offices during the year. The REVIEW congratulates Dr. Torrance on the great honor his government has bestowed upon him in selecting him for so important an office in its service, and at the same time we congratulate the Canadian government upon the wisdom of its choice of a Veterinary Director General.

THE INDIANAPOLIS MEETING OF A. V. M. A.

Never in the history of the association have so many members and visitors congregated at the convention city so far in advance of the date of opening as at Indianapolis. Probably two hundred had arrived on Sunday; and they continued to pour into the Hoosier capital all day Monday. Tuesday, Wednesday and Thursday also showed increased registration each day, so that by Thursday evening approximately six hundred veterinarians and about one-third that number of ladies were in attendance. President Brenton sounded the gavel at 10:30 a. m. of the twenty-seventh in the Auditorium of the German House, and declared the forty-ninth annual meeting in session. Ex-Mayor Brookwater gave one of the most pleasant and cordial welcomes to the city that the association has ever received; which was responded to by Dr. John G. Rutherford, who seemed to be in splendid form, and delighted both Mayor Brookwater and his audience. In its election of officers, the association chose Dr. John R. Mohler, of Washington, D. C., for its president, and expressed its appreciation of the efficiency of the services of Secretary Marshall and Treasurer White by re-electing them to their respective offices.

Notes on the Indianapolis meeting will be found on page 739, and a detailed account will be published in our next issue.

ORIGINAL ARTICLES.

DISEASES AND TREATMENT.*

BY B. F. KAUPP, M.S., D.V.S., FT. COLLINS, COLO.

Dr. G. Ed. Leech, of the committee, says for Minnesota: "The state of Minnestota is to be congratulated upon the fact, as stated before, that the Live Stock Sanitary Board has Dr. S. H. Ward as secretary. Tuberculosis is practically eliminated from the pure blood herds of the state, and I can positively say that among the grades and the dairy herds of the state, there is a very marked reduction in the condemned cases, thanks to the united efforts of the profession of the state to do honest clean work. We are gradually reducing the number of positive reactors each year.

"There has been very little glanders reported. The most of the cases are confined to the twin cities.

"Hog cholera, anthrax and blackleg have done very little damage since making my last report. There is scarcely any anthrax and very little hog cholera and blackleg. Outbreaks of these two diseases have been promptly reported and vaccination has resulted in very light loss.

"Minnesota is to be congratulated along these lines upon the work done by the general practitioner and the Live Stock Sanitary Board and its corps of efficient field men, who are working together harmoniously for the suppression and eradication of contagious and infectious diseases, and with an efficient and capable secretary in charge of the live stock sanitary work who is continually watching the legal phases of the question, there can be no fear but that Minnestota will always be as she is now, reporting a low average in infectious and contagious diseases."

* Report of the Chairman, Committee on Diseases and Treatment; Missouri Valley Veterinary Association, July 1 and 2, 1912.

For Nebraska Dr. A. Bostrom reports as follows: "In regard to our state will say that we have been fortunate during the past year is not having serious outbreaks of any epizootic diseases among our live stock in Nebraska. We have had, however, local outbreaks as usual in horses, cattle and hogs. Glanders, tuberculosis and hog cholera are the most serious.

"*Glanders*—From January 11 to July 1 twenty-six horses and two mules were killed by this department. These were destroyed without any indemnity. The last legislature appropriated \$25,000 to be used for indemnifying owners of horses destroyed by the state, on account of being affected by glanders. This appropriation became available the seventh of July, 1911. Since that date we have up to June 1, 1912, or almost eleven months, killed one hundred and thirty-five horses and fourteen mules, for which we have paid \$10,290.27. We find that horse owners are anxious to report all suspicious cases now since this law took effect and we believe that we will soon be able to eradicate this disease.

"*Tuberculosis*—We have not had any systematic testing for tuberculosis during the past year, except at South Omaha stock yards, and for interstate shipments.

"*Anthrax*—An outbreak occurred west of Omaha on three farms, along the Papio River, in which both cattle and horses died, and two men became infected but recovered. About 700 cattle and horses were vaccinated at once and the disease was promptly checked.

"*Hog Cholera*—This work is done mostly under management of our experiment station at Lincoln, and a great amount of serum is used with good success, except in a few cases where there seems to be mixed infection. The southeastern part of the state has had the worst siege of hog cholera in years.

"*Blackleg*—This disease is being gradually stamped out through vaccination. The government vaccine, distributed through the department of animal pathology of the Nebraska Experiment Station, is generally used.

"*Infectious Anemia*—This disease is prevalent to a certain

extent in the northeastern part of the state. The state experiment station is still carrying on experiments with this disease.

*“Scabies in Cattle—*This parasitic disease is generally being eradicated. Last fall the cattle were in fine condition and they have stood the severe weather without much loss. A few outbreaks occurred in a non-quarantined area. We have employed a man for the last two months especially for the purpose of looking after these cases.

*“Scabies in Sheep—*Several local outbreaks have occurred in different parts of the state. These cases are looked after as soon as reported and held under quarantine until the sheep are dipped.

*“Ulcerative Ano-Vulvitis in Cattle—*We have had only a few outbreaks of this disease during the past year. In one herd forty out of sixty were affected; some very extensively, but all recovered.

*“A New Disease in Horses—*Last fall a great number of horse owners from several counties in the western part of the state reported to this office that they have a new disease affecting hundreds of horses in their community. The description of the disease in all of these reports is identical: Swelling of the breast with formation of large abscess which would rupture and discharge a considerable amount of thick creamy pus. These abscesses would sometimes form on other parts of the body. This affection was found quite prevalent in horses all over the western part of the state. Some investigations were carried on by the department of animal pathology of the station. As yet there is no report.”

CHAIRMAN'S PORTION OF REPORT.

*Contagious Abortion—*As usual contagious abortion has claimed its share of toll in the Middle West during the past year. In spite of inspections some pure-bred animals introduced from farther east to new localities carry the contagion.

Not only does contagious abortion affect cows, but in some localities mares.

While several microorganisms have been isolated and re-

garded by some as causative agents, yet the short, slender bacillus with two or three chromatin granules, named the *Bacillus abortus*, and first isolated by Bang, is, to say the least, the most often found associated with this disease among cows. Considerable research work has been done by Professor Good, of the Kentucky Experiment Station, who has made considerable study from an etiological standpoint, both among dairies and studs. In the latter there was considerable loss sustained among standard bred and thoroughbred mares. From mares he has isolated a short, plump bacillus from the material of the aborting mares, which appears at least to be the cause of contagious abortion among mares in Kentucky.

It is generally considered that the infection may reach the uterus before pregnancy, at time of copulation or find its way into the vaginal tract after conception.

The organisms are found between the mucous membrane of the uterus and chorion of the fetal membranes. It produces a purulent, yellowish-white-like fluid. At the time of the expulsion of the fetus there may be found a quart or more of this fluid. The germs may enter the circulation of the fetus by way of the placenta. In these cases the germs can be isolated from the internal organs or blood of the fetus.

The symptoms and method of detection of this disease is very important. There may be a slight yellowish-white odorless discharge from the vulva. The animal may appear dull and remain away from the herd. In lactating animals there is a usual falling off in the yield of milk. In heifers the udder appears suddenly larger, and enlargement of the vulva, as if parturition was approaching. After the fetus is expelled the fetal membranes should be removed. Neglect of this has resulted in loss of the cow. The uterus should be irrigated with a mild warm antiseptic and all fluid later removed from the uterus. This should be continued till all discharge has ceased. The animal may now be bred.

It is generally regarded that contagious abortion causes the expulsion of the fetus between the fifth and sixth month of gestation. It has been observed that in herds where contagious

abortion has just gained a foothold the animals may abort much earlier than in those herds where the disease has existed for considerable time. On account of the slow immunity the animal gradually gains, she finally carries the fetus full time and may cease aborting. However, the length of immunity is an important factor for future research to determine. It has been observed that an aborting cow after losing two or three foeti finally deliver two or more full term, and which live, and this same cow later again aborts. Heifers usually abort earlier than cows.

Some work has been done in regards to securing a proper vaccine to combat the disease. This has been variously prepared and variously used and has met with various results. It appears that this germ does not give off as virulent a toxic substance as does the *Bacillus necrophorus*. This being the case, if we are to succeed, it will be with large and repeated doses.

Necrobacillosis—This disease is of considerable economic importance in this great Middle West and particularly in the intermountain region.

Necrobacillosis in the Horse—It has been announced by some investigators that they have found the *Bacillus necrophorus* a causative factor in summer sores or bursatti. The subject of bursatti appears far from settled, as while this is the apparent cause in one part of the country or world, in still others necrosing skin lesions called by this same name in some cases are pronounced as due to a filaria or worm, minute in size, in others apparently a fungus and so on. Sloughing hoofs are sometimes caused by the *Bacillus necrophorus*.

Recently a chronic case of grease heel was presented in Dr. Kingman's clinic at the Colorado Agricultural College. The case was one of some two years standing. Both hind legs were swollen nearly to the hocks and presented the appearance of chronic grease heel. Dermatitis, skin thrown up in folds from which a grease-like substance with offensive odor exuded. The writer observing the case considered the odor as that simulating necrobacillosis and accordingly made a smear and stained with Löffler's

methylene blue, when long thread-like metachromatic staining threads simulating *Bacillus necrophorus* were observed. Characteristic cultures were obtained in tubes of glucose agar and grown after the shake anaerobic culture method.

A rabbit was inoculated subcutaneously and died on the sixth day. Upon removing the skin there was found characteristic necrosis with odor of necrobacillosis. Smears from this lesion stained and examined under the microscope showed the characteristic *Bacillus necrophorus*. Pure cultures were obtained as before.

This case showed marked improvement under hot bichloride packs.

Recently an autopsy was held on an eleven-month-old colt in the writer's investigation work of "no name" disease in Southeastern Colorado. An ulcer was observed in the stomach near the cardio-pyloric juncture and on the pyloric side. The ulcer measured one-half by three-fourth inch and was covered with a crust-like diphtheritic membrane like that observed in stomach ulcers in hogs, due to the *Bacillus necrophorus*. As a matter of routine the section was cut out and placed in formalin with the balance of the specimens. Upon sectioning, staining and studying this specimen under the microscope the part was found to be packed with bundles of the *Bacillus necrophorus*.

Necrobacillosis of Cattle—It has been stated by some investigators that contagious ano-vulvitis so common among cows and heifers some years ago and which has again caused some trouble during the past year, is due to the *Bacillus necrophorus*. Necrobacillosis among cattle is a serious disease in some parts of the country. In the San Louis Valley in Colorado much loss is realized. Recently there was sent to the writer's laboratory the head of a calf from Palmer Lake. Ulcers due to the *Bacillus necrophorus* were found on both sides of the mouth, causing a bulging appearance from the outside. Upon examination there was found a sloughing of the mucous membranes covering the gums and cheek and had invaded the bone. This man had lost six calves out of eight. He stated that the condition appeared

worse in cold stormy weather. He was advised to clean up the yard, sprinkle lime around the correll and on the stable floors. Disinfect with creolin or carbolic acid, 5 per cent. Isolate the well ones from the sick calves and swab out the sores with a 1 per cent. permanganate of potash or the same strength of creolin. All buckets for serving drink should be separate for the sick calves.

Nor does necrobacillosis in cattle stop at this point. There is an excellent specimen in the museum of Colorado Agricultural College of a liver of a beef thoroughly permeated with necrotic areas teeming with the *Bacillus necrophorus*.

Necrobacillosis of Sheep—Sheep and particularly lambs first placed in the feed lots are subject to wounds of the lips due to the hard alfalfa, Russian thistle, etc. Those placed on beet pulp and other feed soft in nature do not contract sore lip. In these wounds pus germs, principally the streptococci and staphylococci, aureus and albus, gain entrance, later the ubiquitous *Bacillus necrophorus* enters, finds conditions favorable by this symbiosis and produces a deep slough, cup shaped and containing a cheesy necrotic material. These lesions emit the characteristic odor and from them the *Bacillus necrophorus* can be isolated. In the sheep placed in the feed lots of Arizona, New Mexico and Colorado the organism finding its way into the wounds is of a strain with low virulency and the sheep recover or gain an immunity in from three to four weeks without treatment. According to statistics gathered by the writer in this investigation work; it appears that this disease has existed in this region, and about the same virulency, for at least thirty years. In Wyoming the *Bacillus necrophorus* is of a more virulent strain and attacks the legs, sheath and other genitilia. Its recovery does not take place spontaneously, but yields readily to hot creolin or similar antiseptic.

During the past winter and spring some interesting observations have been made by Dr. H. S. Eakins, secretary of the Wyoming Sheep Inspection Board.

Ewes having trouble lambing are sometimes assisted by the sheep herder who inserts the hand. Often these cases die of

gangrenous metritis with the *Bacillus necrophorus* present as one of the causative factors. The female genitalia are often infected by being covered with a ram with a necrotic ulcer on the penis or sheath. In one band where ewes were bred under these conditions in December, they aborted during the winter, Dr. Eakins has noted a lamb born with a necrotic ulcer on the head and one with a necrotic ulcer on the tail at three days old.

Recently an imported ram belonging to the college became ill, there was loss of appetite, dull, and later accelerated respiration. The buck died on the third day. An autopsy was held. The following is the anatomical diagnosis: Ulceration of the prepuce and entire urethral passage, covered with a diphtheretic membrane. Hemorrhagic cystitis with retention of urine. Diphtheritic membrane of ureters and pelvis of kidneys Hemorrhagic infarct of left kidney. Cheesy necrotic areas up to one-fourth inch in diameter throughout both kidneys. Both kidneys were four to five times their normal size, the right one weighing 400 grams. The sectioned surface appeared grayish and friable. Cloudy swelling, inflammation and areas of necrosis. Calculi in the left ureter. Caseation necrosis of the deep inguinal lymph glands.

Microscopic Diagnosis—The capsule of the kidney stripped easily, adhering only at the whitish gray areas that were superficial. A smear from these areas stained with Löffler's methylene blue showed characteristic metachromatic granular staining *Bacillus necrophorus*, proving the case one of necrobacillosis. A culture was made in plain agar by shake method for anaerobic germs when a characteristic growth appeared.

Sections made from the kidneys extending into the necrotic area showed cells in all processes from cloudy swelling to necrosis, as well as acute nephritis with intense active congestion.

This buck was purchased from a herd in Wisconsin less than a year previous to his death. He had not had access to ewes for at least four months and no cases of necrobacillosis had been known on the premises for two years.

Necrobacillosis in Hogs—This beast of the devil comes in to pay his toll. Three years ago the writer investigated an outbreak

among 127 hogs near Lafayette, Colo. The entire herd, ranging from suckling pigs to hogs weighing 400 pounds and ready for the market, died.

The blood study showed the following:

Animal.	Numerical.		Differ- ential.			Eosin.	Mast.	Hb.	Remarks.
	Erythro- cytes.	Leuco- cytes.	Poly- morphs.	Monos.	Lympho.				
Hog, weight 125 pounds..	5,800,000	10,000	5	34.5	59	1	1.5	90	Sick 3 days; very sick.
Hog, weight 200 pounds..	3,520,000	40,000	13	16	69	2	2	93	Sick 7 days; nearly dead.
Hog, weight 250 pounds..	3,408,000	24,000	7	15	76	.5	1.5	85	Sick 8 days.

NOTE—Microcytes, Megalocytes and Poikolycytosis.

In these cases there was found necrotic ulcerations on various parts of the legs and some extending to the bone, the same may be said of the nose and mouth with destruction of the bone in some cases. Ulcerations in the center of an area of acute gastritis is common. In some cases in suckling pigs only an erosion of the mucous membrane of the tongue or a smaller gastric ulcer is noted. In these cases the pig shows signs of being very sick. The toxin is very virulent and often a small lesion in the mucosa may give off enough toxin to cause death of the pig.

It has been said that this germ may be found in the intestinal tract of healthy animals.

One hog owner found that his hogs or pigs always contracted necrotic stomatitis if they were allowed access to the horse manure.

The writer has frequently found outbreaks of necrobacillosis along with hog cholera.

Parasitism—Parasitism is ever present in the horse. Of ten horses autopsied by the writer during the past year the following is the result as to parasites:

Strongiles in the caecum and colon, 100 per cent.; aneurysm of the great mesenteric artery due to the larva of strongiles (diagnosis confirmed by the finding of the worms in the blood coagulum), 100 per cent.; gastrophilus hemorrhoidalis larva in the

stomach, 80 per cent.; ascaris megaloccephala, 10 per cent.; gastrophilus equi larva in stomach, 10 per cent.; spiroptera microstoma, 10 per cent.; sclerostoma tetracanthum, 20 per cent.; filaria papillosa, 70 per cent.

Of twenty-four autopsies held upon all ages of chickens the following was the result: Heterakis papillosa, 25 per cent.; menopon biseriatum, 12 per cent.; cytodites nudus, 8 per cent.; ascaris inflexa, 5 per cent.; tænia infundibuliformis, 4 per cent.

Parasitism is of more importance than is generally given credit by the average practitioner. Many of the parasites give off poisonous proteid-like poisons which, when absorbed in sufficient quantities, produces constitutional disturbances. All have noted the effect of the oxuride or pin worm. The writer is of the opinion that many of us are too lax in our autopsy work in the search for parasitism. In the past year every case examined for aneurysm of the great mesenteric artery has proven positive. In one of these cases the horse was only eleven months old. An aneurysm was found the size of the finger and in which coagulum was found four larval strongiles. Some of these aneurysms are three or four inches from the point where the artery springs from the posterior aorta.

The *Sarcocystis miescheri* in all probabilities causes more injury among cattle and sheep, and possibly other animals, than has heretofore been supposed, and may be the cause of some of the occult troubles. In an outbreak among sheep where several had died, two were autopsied and the skeletal muscles as well as the heart were found to be thoroughly studded with this parasite. The writer has found this parasite in three beef hearts during the past year which are believed to have contributed disease from which these cattle died. In one heart intense congestion was observed.

Our secretary has asked me to make a report of some of my investigations into poultry diseases during the past four years. This I have reluctantly consented to do.

WHITE DIARRHOEA OF CHICKS—There are two causes of white diarrhoea in chicks as I have found it. First, the bacillary form due to the *Bacillus pullorum*, a very short, plump, rod-

shaped germ with rounded ends, and, second, a protozoon, the *Coccidium tenellum*. The germ of the bacillary form has been isolated from the liver, spleen, kidneys and other organs of chicks dead of the disease, and the coccidian form from ulcers we have found in the caecum and intestines.

Symptoms—The bacillary form is accompanied by droopy wings, ruffled feathers, sleepiness, a tendency to huddle together, and little or no appetite. The abdominal yolk is not properly absorbed and the whitish-brown, frothy discharge from the bowels adheres more or less to the vent fluff; the eyes are closed part of the time and there is apparently no interest in life. The appearance in many is stilty, with abdomen prominent behind, and they peep much of the time. In these cases, after death, one finds the yolk unabsorbed, or only partially so, and the intestines are more or less full. Chicks that hatch in late fall, winter or early spring are freer from this disease than summer hatched. This may be explained by the fact that hens with diseased ovaries gradually become poorer layers as the disease processes advance, and, hence, only lay in late spring or early summer when nature intends reproduction of birds. Finally the hen may cease laying altogether.

In the coccidian form the symptoms as studied by the writer are similar to those of the bacillary form, except that, as a rule, the heavy death rate takes place later.

Mode of Spread—In the bacillary form the ovaries of laying hens, diseased but still functioning, may be infected by the germ. The germ can be isolated, particularly from the yolk, of at least some of the eggs from such an ovary. The chicks from infected eggs, as a result, have the disease more or less developed when hatched, as conditions which favor hatching also favor the multiplication of the germs to such an extent that sufficient toxic poisons have already been produced in the young to cause the disease, or at least manifest itself within a few hours after hatching. From these chicks the whitish, frothy, pasty bowel discharge, more or less sticky and with a tendency to paste up the vent, is laden with germs, and others of the flock soon become infected from contaminated food picked up from the ground. In the bacil-

lary form the chicks may begin to die soon after hatching; in the coccidian form in from three to four days to ten days, a few dying each day till about the twenty-first day, then only a few after that time.

The death rate is high, reaching in many cases 75 per cent. or more. Those that recover are stunted and do not make satisfactory growth. It is probable that the disease carriers are recovered chicks, which have established immunity but still carry organisms, especially in the ovary, as typhoid carriers do in infected kidneys or bowel ulcers.

Coccidian Form—The mode of spread of this form is at present problematical. It is possible that chronic types occur in some birds and thus perpetuate and scatter the organism.

Post Mortem—In the bacillary form the liver in general is usually pale, showing areas of active and passive congestion and cloudy swelling. The yolk is only partially absorbed and congestion of the intestines may or may not be present. The kidneys are normal in size, but show congestion and cloudy swelling, and the carcass is more or less pale and emaciated.

Coccidian Form—Upon post mortem examination the conditions are found to be similar to the bacillary form, except that there will be noted more or less congestion of the intestinal lining with ulcers in the intestines, principally the caecum. The caecae appear to be interfered with functionally, containing considerable ingesta. A study of a section through these ulcerated areas show cloudy swelling followed by other retrogressive changes and death of the cells. The remains of the dead cells form a cheesy mass. It will be noted in many places that the mucosa is entirely denuded or at most only remnants of glands remain. Often these processes extend into the submucous structures.

Repeated examinations have been made of healthy chicks killed for the purpose, and chicks dying from other causes, and thus far no case has shown these conditions.

Treatment—Unsanitary conditions, spoilt feed, dirty, stagnant water, improperly ventilated incubators, brooders and buildings, or badly regulated heat are factors in weakening the physical

condition of chicks and favors ravages of disease. Chicks should be fed from troughs and watered from fountains. Solutions of permanganate of potash, carbolic acid and other similar drugs have given us no good results. We have succeeded in saving 75 per cent. to 80 per cent. of the hatches where we kept constantly before them a solution of sulphocarbolates of zinc, calcium and sodium with 1-10,000 bichloride of mercury, using citric acid as an aid to dissolve the mercury. Later we have tried the three sulphocarbolate compounds mentioned with the addition of sulphocarbolate of copper, and at present it appears to be a good substitute for the mercury.

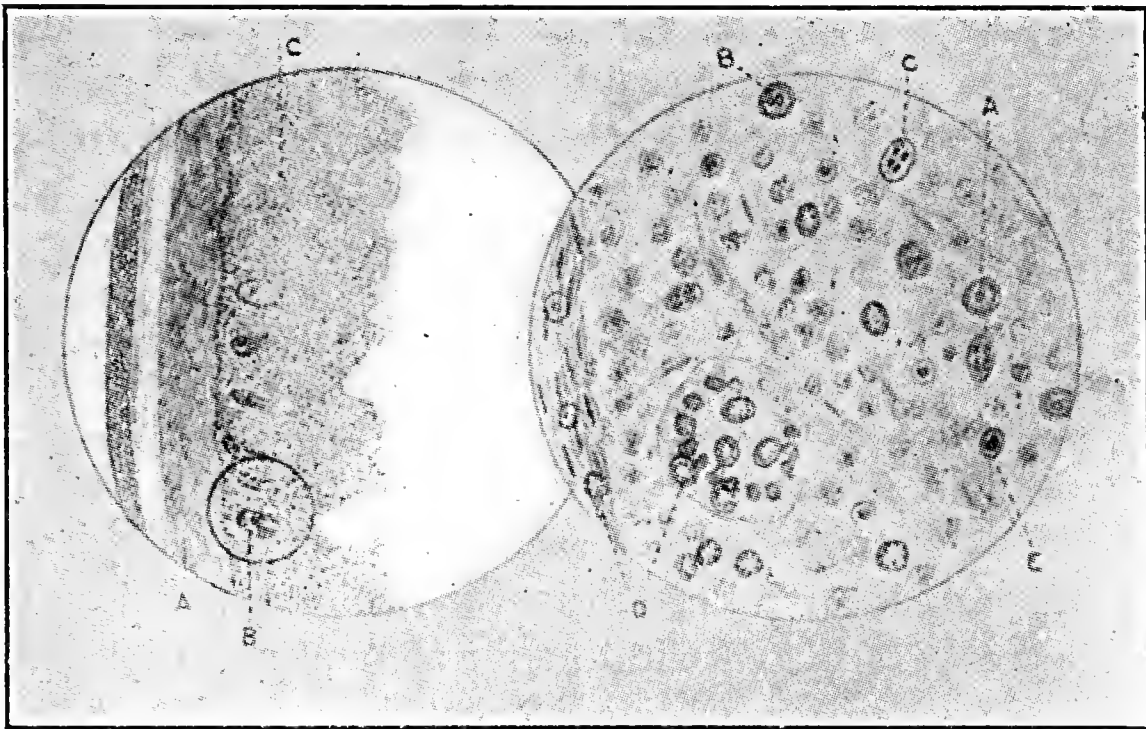


Figure 1.

Figure 2.

Figure No. 1 illustrates a drawing through an ulcer of the caecum due to the *coccidium tenellum* (from a case of coccidian white diarrhoea). A, the muscular coat; B, remnant of one of the glands; C, the degenerated, disintegrating mass, complete destruction of the mucous membrane; magnified 100 times.

Figure No. 2 shows a higher magnification of the above indicated by B; magnified 900 times. This shows various stages in the life cycle of the *coccidium tenellum*. A, the cocyst; B, first stage of the sporoblast; C, first stage of the sporozoite; D, the schizont stage showing the merozoites, these are surrounded by a disintegrating cell mass; E, one of the polymorphonuclear

neutrophiles. Three of the protozoa have invaded the musculature.

ROUP OR AVIAN DIPHTHERIA—This condition is sometimes called swelled head, because usually there is swelling about the head.

Cause—The cause appears to be far from settled. American and European investigators have from time to time isolated different germs, all of which perhaps contributed to the production of conditions found, but there are none of these germs that are constantly found by all. With a view of determining whether or not the type of roup existing in Colorado is due to an ultra-microscopic germ, two diseased hens were secured. These birds had swollen eyes, with an accumulation of catarrhal product in the maxillary sinuses and a discharge from the nostrils of an offensive odor. There were also characteristic yellowish-white diphtheritic patches in the mouth. Material from all these lesions from both birds was prepared in physiological salt solution and filtered through a Pasteur filter, calculated to take out all germs that can be seen by aid of the microscope or that could be produced in visible growth upon artificial media. The fluid that passed through this filter was used in inoculation experiments. The birds used for this purpose were from flocks in which roup had not appeared. In all fifteen inoculations were made. Tubes of media were inoculated with the filtrate and no visible growth of germs was seen after being incubated at 37 degrees Centigrade for 72 hours.

Observations were continued on the inoculated birds for a period of thirty days and roup did not appear in any of them. So far as this one experiment goes it does not indicate that our type of roup is due to a filterable virus.

Mode of Spread—The disease is spread by the introduction of birds from infected premises, and by exposure of birds at poultry shows to the contagion. A chronic type of the disease in some birds of the flock may serve to infect others, when they are weakened by predisposing causes, as by exposure to cold, damp roosting places, drafts and badly ventilated buildings.

Symptoms—There are three forms of the disease. In the

nasal form there is at first a thin watery discharge from the nostrils, with an offensive odor which is characteristic of roup. Later the catarrhal product becomes somewhat thicker and the nostrils become glued shut, and quite frequently there is a bulging of the maxillary or infraorbital sinus. This is due to the accumulation of the inflammatory products in this sinus. The second part affected is the mouth. This affection often accompanies the nasal form. It is characterized by diphtheritic ulcerations which are covered with a yellowish-white crust or coagulated exudate. These necrosing patches gives it the name of avian diphtheria. The third location is the eye. There is at first an inflammation of the mucous membrane covering the anterior part of the eyeball. As the disease progresses, the catarrhal product accumulates as a watery clot-like mass, whitish in color. The eyelids stick together and hold the material as it accumulates till the parts bulge outward. There is sneezing, shaking of the head and expulsion of mucous and loss of appetite; the bird appears weak, and has a tottery walk and becomes rapidly emaciated. Breathing is difficult at times, and often there is diarrhoea, and the bird dies in a few days.

Treatment—Correct any condition which may be a predisposing cause. The hen-house should be well ventilated, but without drafts on the birds, and it should be cleaned and disinfected daily. If the bird is not valuable, kill and burn it. Treatment with drugs differs with the location of the lesion. For the ulcers or diphtheritic patches in the mouth, nothing is better than burning with stick nitrate of silver. For the eyes, press open the lids and remove the material with clean absorbent cotton, then apply the material as for infection of the nostrils. Wash out the nostrils with a 20 per cent. solution of common baking soda, then with peroxid of hydrogen. With a medicine dropper or small syringe, inject some of the following: Oil of thyme, 1 dram; oil of eucalyptus, 20 drops; oil petrol, 2 ounces. Give plenty of clean water and soft feed. Give one grain of quinine three times a day, as well as a tablespoonful of castor oil.

A CORRECTION: In Dr. H. D. Bergman's article, "Oil of Camphor," on line 6, page 587, should read, "camphorated oil."

BIOLOGICAL PRODUCTS (VETERINARY).*

BY ROBERT H. WILSON, D.V.M., DETROIT, MICH.

The rapid advances made in recent years in microbiology have given a clearer conception of disease and its processes. The extensive investigations of infection, immunity and their various phenomena have resulted in the development of new methods of diagnosis, prevention and treatment of specific infectious diseases, through products of biological origin. These products, which include toxins, antisera and vaccines, are of bacterial origin and consist of the substances resulting from bacterial growth of the reactive agents in the blood of animals treated with bacteria, or their toxins, and of bacteria modified more or less.

It is only within the past few years that biological products have been employed extensively in veterinary medicine. There has existed more or less prejudice against them on account of their expense and apparent inefficiency in some cases. But this prejudice has been practically eliminated, and the demand for the products would indicate that their practical value in most instances has been proven without a doubt. The products which have been developed recently have met with general favor, for the modern veterinarian, like the human practitioner, is ever alert to acquire methods that will materially aid him in his chosen work.

Before taking up a discussion of the various biological products used in veterinary medicine, it will be well to review briefly the subject of immunity, for it is on this all important subject and its phenomena that the biological products have their basis.

By immunity is meant resistance, or non-susceptibility to a disease or an organism, or its metabolic products, either under

* Read before the February, 1912, meeting, Michigan State Veterinary Medical Association. Research Laboratory, Parke, Davis & Co.

natural conditions or under those experimentally produced. Resistance to infection is often a natural inborn quality of a species or an individual. Such resistance is named natural immunity. Immunity may be acquired by an animal either by passing through an attack of the disease, or by means of artificial inoculation. It is with this latter method of producing immunity that the veterinarian is concerned. According to the process by which it is produced, acquired immunity may be said to be of two kinds, active and passive, the former being more or less permanent and the latter temporary.

Active Immunity. Active immunity may be obtained by one or more injections of the organisms, in a weakened condition or by sub-lethal doses of virulent organisms or their toxins. By increased doses at varying intervals, the animal will develop in the course of time a comparatively high degree of resistance to the material injected. Such means constitute the process of preventive inoculation or vaccination. The production of active immunity is a comparatively slow process. The resultant resistance lasts a considerable time, the duration varying in different cases.

Passive Immunity. Passive immunity depends upon the fact that if an animal has been rendered immune by any of the methods used in the production of active immunity, its serum will contain substances which have distinctly antagonistic or neutralizing effects on the specific bacteria or their toxins, whichever the case may be. Such sera may be used prophylactically or therapeutically in the early stages of the disease.

In the case of active immunity the animal protects itself through its own activities, the cells of the body participating in the process. In passive immunity, protection depends upon substances developed in some other animal, the individual receiving these substances having practically no part in the immunizing process.

Antibodies. Among the anti-substances, or antibodies developed in the tissues of an infected animal, or one actively immunized may be named antitoxins, lysins (bacteriolysins), opsonins, agglutinins and precipitins.

Briefly, antitoxins are formed as the result of the introduction of toxins. They are so named because they combine and render inert their specific toxins. They are biochemical substances, which are given off from the cells of the body. The nature of their composition is as yet undetermined.

Lysins. The injection of cells, animal, plant or bacterial have been found in most cases to stimulate the formation of specific antibodies, which have the power of dissolving or breaking up these cells. The antibodies are known as cytolytins and are usually named with reference to the cause of their production, as bacteriolysins, hemolysins, etc. The injection of bacteria produce bacteriolysins, red blood corpuscles, hemolysins. Two elements known as amboceptor and complement are essential for producing the lytic action.

Opsonins. Antibodies which sensitize bacteria rendering them more susceptible to the attacks of the phagocytes. These substances were forcibly brought to the attention of medical science in 1902 by Wright and Douglas, as the result of their studies on opsonization.

Agglutinins. Bodies present in the blood and possible other fluids of the body of an animal affected with or recovering from a specific infectious disease. When a small amount of the serum from such an animal is added to a suspension of the corresponding bacteria, the organisms will become agglutinated into clumps and precipitated.

Precipitins. Substances found in antisera which have the property when brought in contact with its specific antigen, of causing a cloudiness or precipitate.

The above-mentioned hypothetical bodies are present to some extent in normal serum. Infection, natural or artificial, tends to increase the amount.

In order to afford convenience in their description, the biological products used in veterinary practice may be classified into the divisions—vaccines, including bacterins or bacterial vaccines—antisera, toxins.

VACCINES.

Anthrax Vaccine. Probably the first biological product used to any extent in veterinary medicine was Pasteur's Anthrax Vaccine. Pasteur in 1880-82 elaborated a method by which a mild form of anthrax could be given to an animal, which rendered them resistant to a subsequent inoculation with the specific virulent bacteria. He found that the continued growth of the anthrax organism at 42-43 degrees caused them to lose their ability to produce spores and also gradually to lose their virulence. This method, but slightly modified, is probably the most important at present. It is a double vaccine, that is, it consists of two strengths of virus, No. 1 being weaker than No. 2. In the preparation of the product the anthrax organisms are grown on agar or in bouillon at a temperature of 42 degrees for a period ranging from 10 to 20 days. In the case of vaccine No. 1, it is usually incubated about 20 days. The resultant growth of the organism is then suspended in normal salt solution, or other liquid and tested for activity and safety. Mice, guinea pigs and rabbits are used in these tests. A satisfactory test should show that vaccine No. 1 in small doses should kill mice, but not guinea pigs or rabbits. Vaccine No. 2 in the same dose should kill mice and guinea pigs, but not rabbits.

In administering the vaccine, about 1 c.c. of vaccine No. 1 is injected subcutaneously. Ten or fifteen days later the same amount of vaccine No. 2 is given. The vaccine should be used only on healthy animals, for if an animal is infected at the time of treatment, the vaccine being a virus, will tend to aggravate the condition and result fatally. Not infrequently the vaccine will produce a severe or fatal reaction in a normal animal. The results from the use of this vaccine indicate that it is of great value in dealing with anthrax, if properly prepared and administered. The fact, however, that it is an attenuated but living virus, should always be kept in mind, for by its promiscuous and reckless use it may be the means of spreading the disease instead of curbing it.

A product consisting of the protective and immunizing properties of the anthrax bacteria, but the organisms themselves being destroyed, is on the market. It is much safer to use than the Pasteur vaccine and the results obtained from its application seem to be quite satisfactory. This preparation is put up in pellet form and is easily and conveniently applied.

Blackleg Vaccine. This vaccine, which consists of the attenuated blackleg organisms, may be a single vaccine conferring immunity by one inoculation or a double vaccine, which requires two inoculations to produce successful results. The strength of the single vaccine is about half way between that of the first and second of the double.

The product is prepared from the affected muscle tissue of animals dead from the disease. The muscular tissue containing the organisms is thoroughly dried and ground to a powder. Usually a sufficient amount of sterile water is added to the powder to produce a paste of the consistency of soft putty. The material is then subjected to a temperature of from 90 to 100 degrees for six or eight hours. The degree of heat used in the preparation of the vaccines is used as a basis for differentiating them into single and double vaccines.

Both single and double vaccines are marketed in the powder or oil or pellet form, the latter having been first suggested by Houghton in 1898. There is practically no difference in the efficiency of the powder and oil forms; the oil form, however, seems to be more popular, as it is convenient to administer and assures accuracy of dosage. The double vaccination is recognized as giving a greater degree of protection, and it is especially recommended for pure bred stock and animals in poor physical condition. The vaccine is injected subcutaneously, any region being used, the neck, tail, ear or brisket. It is of course quite essential to disinfect the site of the injection, also to have the needles and syringes as nearly sterile as possible.

The duration of immunity produced by the vaccine is of varying length. The younger the animal the shorter seems to be the period of immunity. Calves under a year old should be vac-

inated frequently, every three to four months if possible. After one year of age vaccination gives protection for five or six months. Cattle older than two and a half years very seldom need to be treated, especially if they were vaccinated when calves. As the vaccine produces immunity by giving the animal a mild form of the disease, it is advisable not to vaccinate if the animal is already exposed or suffering from the disease. Nor should they be vaccinated if they are suffering from any debilitating disease or in poor condition resulting from shipping, driving or lack of feed or care. Vaccinating at the time of dehorning or castrating, or during cold or stormy weather, is not recommended.

Blackleg vaccination is now generally recognized as an efficient and reliable means for the prevention of blackleg. It has done much towards reducing the prevalence of the disease. Occasionally an animal treated with the vaccine dies from the results of the inoculation, but the number of such fatalities is so small as to become a negligible quantity when compared with the great protective value of the vaccination.

Rabies Vaccine. In 1885 Pasteur devised a vaccine for the prevention of rabies in the human which has given very satisfactory results. Owing to the complicated nature of the treatment, it has not been employed in veterinary medicine until quite recently. The treatment consists of a series of vaccinations with rabies virus of a known degree of attenuation. In the preparation of the vaccine, rabbits are inoculated with a fixed virus, that is one that has reached its maximum degree of virulence for the species. Death usually occurs in the rabbit in six or seven days. Its spinal cord is then removed in its entirety and submitted to a process of desiccation by suspending it over caustic soda or potash at a temperature of 22 c.c. for a definite period. In administering the vaccine the patient is first given an injection of the virus that has been attenuated for a week or more. Each succeeding dose consists of virus that has been attenuated less and less until the animal has reached such a stage of immunity that it can withstand unattenuated virus.

Reports indicate that the method is attended with the same degree of success as in dealing with rabies in man.

Tuberculosis Vaccine. Among the various vaccines that have devised for animal tuberculosis, perhaps von Behring's bovovaccine is the best known. It consists of attenuated tuberculosis organisms, usually the human variety. The commercial product is prepared by using a weakened culture of the organism, which is grown on suitable media, carefully dried at a temperature which will not destroy its activity and finely pulverized. It is then accurately weighed out into containers and sealed. The practical value of this product is rather doubtful.

Bacterins. (Bacterial Vaccines.) Bacterial vaccines are biological products of comparatively recent origin. They consist of dead pathogenic bacteria suspended in normal salt solution, standardized by determining the number of bacteria per centimeter of suspension, and are administered hypodermatically. Their therapeutic effects depends upon the fact that they increase the opsonins in the blood. When a bacterial vaccine is injected into the tissues of a patient suffering from an infection of the corresponding live organism, the formation of the special opsonin having the power of reparing that bacterial species for phagocytosis is stimulated. In veterinary medicine bacterial vaccines are used chiefly for the treatment of suppurative conditions. The vaccine may be monovalent, that is contain but one strain of bacteria, or polyvalent, containing two or more strains. They may be prepared from cultures obtained directly from the disease processes of the patient, in which case the vaccine is called a personal or autogenic vaccine, or similar organisms obtained elsewhere may be used. These latter are known as stock vaccines.

Bacterial vaccines are indicated in strangles, influenza, puerperal fever, erysipelas, fistula, quittor, abscesses; in fact all infectious diseases or conditions due in main or in part to any of the staphylococcus or streptococcus organisms. They may be used advantageously in pneumonia and colon infection.

As cases vary in character and extent, no hard and fast rule of dosage can be laid down. The clinical symptoms should be the guide as to the size of doses administered. 150,000,000 organisms may be considered an average initial dose, the dose

being increased as treatment is continued. Injections should be repeated at intervals of from three to seven days, as indicated by the symptoms. If there is an aggravation of symptoms either local or constitutional following an injection, further treatment should be withheld until they have subsided.

The results obtained by the use of bacterial vaccines, properly prepared and administered, are indeed gratifying. Many stubborn suppurative conditions, such as fistulous withers, poll evil and quittor, which do not yield to ordinary surgical and medicinal treatment, are benefited and completely cured by bacterial vaccines. Febrile disorders due to bacterial infections, in many cases respond to bacterial therapy and make rapid recoveries.

ANTISERA.

Tetanus Antitoxin. As mentioned before, an antitoxin is a reactive substance developed in the blood of an animal injected with toxin. Tetanus antitoxin is one of the best known of the standard antitoxins. It consists of the serum of a horse which has acquired a high degree of immunity to tetanus by repeated injections of the specific toxin.

In tetanus the specific organism remains localized at the point of infection. Multiplication of the organisms take place at this point, with the production of their powerful toxin. The toxin has special affinity for nerve tissue, and is supposed to be absorbed by the nerve endings with which it comes in contact and conveyed by the nerves to the central nervous system. The expected action of any antitoxin is to neutralize or render harmless its specific toxin. In the case of tetanus antitoxin this result can only be accomplished before the toxin is fixed in the nerve tissues. Therefore, the administration of tetanus antitoxin should begin as soon as possible in order to accomplish the best results.

As a prophylactic agent against the disease this product is now generally recognized as a specific. It is especially indicated in the treatment of animals affected with wounds, such as nail pricks and punctures, the nature of which are conducive to the development of the tetanus organisms. Many operators will not undertake an operation of any consequence without first admin-

istering tetanus antitoxin. The immunizing dose of this product is about 1,500 units.

Good results have been obtained with the antitoxin in many cases as a curative for the disease, especially in mild cases. As a curative it is given in larger doses and repeated, each dose containing at least 3,000 units given every three or four hours until the symptoms show abatement.

The immunity produced by tetanus antitoxin is of course of a temporary nature.

Influenza Antitoxin. The so-called influenza antitoxin, which consists of the serum of an animal recovered from an attack of influenza, has, according to many practitioners, given excellent results in immunizing against influenza and kindred affections.

Antistreptococcic Serum. This is serum from a horse which has been immunized to killed cultures of the streptococcus organisms. Frequently several different strains of the organism are used. It has given fairly good results in many cases of streptococcus infection.

Antihog Cholera Serum. This product devised by Dorset and Niles is at present probably the most reliable biological product for combating hog cholera. Hogs which are immune to cholera either through natural immunity or artificial immunization, are used in the preparation of the serum. These hogs are hyperimmunized by the injection of a large amount of the hog cholera virus. The intravenous method of injecting the virus seems to produce a more potent serum with a smaller amount of virus than is the case with either the subcutaneous or intraperitoneal method. About ten or fifteen days after receiving the virus the animals are bled from the tail, each succeeding bleeding being at intervals of a week. The blood is defibrinated and tested for potency. This defibrinated blood constitutes the hog cholera hyperimmune serum.

There are two methods of administering the serum in the field, one known as the "serum alone method" and the other the "simultaneous method." In the former method the serum alone without any virus is injected. This method produces a

temporary or passive immunity, the duration of which does not exceed a period of probably a month or six weeks. In the simultaneous method a small amount of disease producing blood or virus is injected with the antiserum. This method is of the nature of a vaccination producing an active or more lasting immunity than that produced by the serum alone method.

The serum alone method is indicated in herds which have been infected or are in close proximity to infection. The simultaneous method in herds which are free from the disease. The dose of the serum is from 20 to 40 c.c. per hundred weight.

The serum gives good results, especially as a prophylactic for the disease, provided it is properly prepared and administered.

Antianthrax Serum.—This serum is used to some extent in immunizing against anthrax, especially when an immediate protection is desired. The serum is prepared by hyperimmunizing animals, usually sheep, first by injecting weakened cultures of the anthrax organisms, then by more virulent cultures. The serum from an animal so treated constitutes the antianthrax serum. The immunity produced by this product is of a temporary nature, but seems to be of sufficient length in many cases to protect the animal until it can be actively immunized with the Pasteur Vaccine.

Dawson has obtained very good results with the anti-anthrax serum, especially when it is used in conjunction with the vaccine.

BIOLOGICAL DIAGNOSTICS.

Tuberculin is probably the most extensively used biological diagnostic agent in veterinary practice. It consists mainly of the products of the tuberculosis organisms grown in 4 per cent. glycerin bouillon. Many types of tuberculin have been produced by various workers, but the two known as "Koch's Old" and "Koch's Purified" are of special concern to the veterinarian.

"Koch's Old Tuberculin" is prepared by inoculating flasks of 4 per cent. glycerin bouillon with the tuberculosis organisms, incubating for a period of from six to ten weeks or longer. After the growth is complete the cultures are sterilized and then evapo-

rated over a water bath to one-tenth the original volume. The bacteria are removed by passage through filter paper and Berkefeld filter. The dose of the concentrated tuberculin is 0.25 of a c.c., but owing to the material being of a syrupy consistency and the smallness of the dose, it is diluted with 7 to 9 times its bulk with 2 weak solution of carbolic acid before being used. This is the tuberculin employed in the ordinary subcutaneous test.

Koch's Purified Tuberculin consists of the precipitate which results from adding several volumes of absolute alcohol to the "Old Tuberculin." The precipitate is washed and dried. Before use the dried tuberculin is diluted in water or glycerin. This product is used in the ophthalmic test.

The technique involved in applying the tuberculin subcutaneous test is familiar to all and need not be mentioned here.

The ophthalmic or Calmette test has recently come into use more or less extensively. It consists of instilling a small amount of the purified tuberculin into the conjunctival sac. A positive reaction is characterized by a marked hyperemia of the conjunctiva in from five to ten hours after the application of the tuberculin. At present this test is not considered as reliable as the subcutaneous.

The tuberculin test has proven to be of great value in detecting tuberculosis and if it is honestly and intelligently applied can be considered sufficiently reliable to be depended upon in every case.

Mallein.—This biological product consists of the glycerinated bouillon in which the glanders bacteria have grown and in which are contained the products resulting from their development. It is prepared and used in a similar manner to tuberculin. In the case of a positive reaction with Mallein there is in addition to the elevation of temperature more or less local and sometimes constitutional disturbances.

Mallein is recognized as a fairly efficient agent in dealing with glanders. If the operator is familiar with all the details of the test and capable of interpreting the results, its usefulness cannot be doubted.

Reaction sometimes fails in advanced cases of the diseases, but in such cases the symptoms are usually diagnostic. If a primary test leaves the matter in doubt, the animal should be re-tested in a month or two.

Agglutination Test Fluid.—The agglutination test for the diagnosis of glanders has been used for several years and with reasonably good results. This test is based on the fact, as previously mentioned, that in the case of glanders as well as some other diseases, there is developed in the blood, antibodies known as agglutinins, which have the power of clumping and precipitating the specific bacteria of the disease. The test fluid or suspension containing the glanders bacteria is prepared by inoculating acid glycerin agar with highly virulent cultures of the glanders organisms. After 24 or 48 hours' incubation the resultant growth is removed from the media by adding a quantity of normal salt solution. The suspension is heated to destroy the organisms and then diluted to the desired density.

In applying the test, serum from the suspected case is added to the test fluid, several dilutions being made. Usually the dilutions prepared are 1 part of serum to 800 of test fluid, 1-1200, 1-1500 and 1-1800. The reason for making such high dilutions is that normal serum frequently contains a sufficient amount of agglutinins to cause the characteristic reaction in dilutions as high as 1-500 or 800, so that in order to make the test of diagnostic value much higher dilutions must be employed. After the dilutions are prepared they are incubated for 24 or 45 hours. A positive reaction consists of a clumping and precipitating of the organisms in the test fluid, so that the fluid will have lost its turbidity and be perfectly clear. The clumped organism will have settled in a mass at the bottom of the test tube or container. A positive reaction in dilutions of 1-1200 or higher is indicative of glanders.

This method is an accurate means of diagnosis if proper care is used in making the test. It is of great value in conjunction with the mallein test, especially in those cases which are considered doubtful. It is important that an active suspension be employed for the test in order to obtain reliable results.

Mallease.—Mallease is a preparation used in the precipitin test for the diagnosis of glanders. It is prepared by dissolving the glanders bacteria in a 7 or 8 per cent solution of antiformin, neutralizing the solution after 2 hours with 5 per cent. sulphuric acid and then filtering through paper and Berkefeld filter. The active principal of the solution is known as precipitinogen, which has the property of combining with the antibody, precipitin and forming a precipitate. According to Konew, who devised the precipitin test for glanders, the formation of precipitins in the fluids of the body begin at the time of the entrance of the infectious agent, which apparently indicates that the test should be valuable in detecting the disease at the onset. To carry out the test 1 c.c. or any small amount of the mallease is placed in a slender test tube. Then about the same amount of the serum under test is taken in a pipette, which is inserted into the mallease solution until it reaches the bottom of the test tube. The serum is permitted to escape slowly under the mallease so that the two will not mix, a sharp line of separation dividing the two fluids. If the serum is from a glanders animal a precipitate, in the form of a white ring, will appear at the line of separation, the density of the ring, and the time necessary for its formation usually depending upon the severity of the case. The precipitate is the result of the interaction of the precipitin in the serum and the precipitinogen contained in the mallease. The time required for the test varies from a few minutes to an hour or more.

This test gives fairly uniform results in practice, although occasionally the ring which forms is rather indistinct and leaves the operator in doubt as to the diagnosis. Field experiments with the test conducted by our laboratory, show that in the majority of cases it confirms the results of the mallein and agglutination tests.

The *complement fixation* test that has been recently employed for the diagnosis of several animal diseases, particularly glanders, is dependent on several products of biologic origin. For the glanders test they would be an extract of the glanders organism (antigen), the blood of a rabbit which has been immunized to

the washed red corpuscles of a sheep (hemolytic amboceptor), normal serum of a guinea pig (complement) and washed red corpuscles of a sheep. The test is based on the phenomena of hemolysis and bacteriolysis and is of such a complicated nature that it must necessarily be a laboratory test. In substance the test may be briefly described as follows,—the specific immune bodies, (bacteriolytic amboceptor) in the serum of glandered animals combined with the antigen (glanders bacilli extract) and the complement. When the hemolytic amboceptor and its antigen (red corpuscles) are added later, no hemolysis will take place because one of the factors (complement) necessary to accomplish this is not available, as it has combined with the glanders antigen and bacteriolytic amboceptor. On the other hand if the serum under test is from an animal free from glanders, it will not contain the bacteriolytic amboceptor, and the complement will be free to unite with the hemolytic amboceptor and antigen, with the result that hemolysis will occur as evidenced by the liberation of hemoglobin in the fluid.

This test is recognized by some authorities as being the most reliable method for the diagnosis of glanders. It is used to some extent in the detection of contagious abortion in cattle.

The above list includes the principal and most practical biological products used in veterinary medicine at the present time. Since their advent they have aided materially in the diagnosis, prevention and treatment of many of the specific infectious diseases of animals and have enabled the veterinarian to accomplish better results in his fight against disease than was possible with some of the former methods of treatment, which were more or less empirical in nature.

If medical research is as fruitful in the future as it has been in the past, it would seem that the time is not far distant when practically every form of infection can be successfully combated with a biological specific.

New York State Fair and Horse Show, at Syracuse, September 9 to 14.

THE VETERINARIAN IN RELATION TO PUBLIC HEALTH.*

BY HAROLD E. STEARNS, D.V.S., ARLINGTON, N. J.

The problems which are arousing the greatest interest in the veterinary profession to-day, are those which relate to the control and eradication of the various infectious diseases of animals and to the safe-guarding of the meat and milk supply of the nation.

In making this statement, it is not intended to detract from the importance of those subjects which relate essentially to general veterinary practice, or to the man who specializes in them; the humane service that he renders in alleviating the sufferings of our dumb animals and his economic value in preserving the life and usefulness of man's most faithful and efficient servant, the horse, from diseases not due to infection is sufficient in itself to have earned for him the gratitude due a real benefactor of both man and beast.

It is nevertheless the fact that the achievements of the veterinary profession, which will bring to it the greatest measure of honor and distinction, will be those of the future along sanitary lines.

Primarily a healer of the diseases of animals, occupying in the public estimation a position of importance measured by the value of the animal under treatment, permitted under the law, until recently, to practice without any scientific training whatever. even in the most advanced communities, and still permitted to do so in some states, to the lasting shame of those responsible, the veterinarian has never received the respect and distinction accorded the practitioner of human medicine, upon whose skill and scientific attainments the preservation of human life was thought in a large measure to depend.

* Presented to the Veterinary Medical Association of New Jersey, at Jersey City, July, 1912.

It is only of recent years that the close relation which exists between many of the diseases of animals and those of human beings, and the importance of the veterinarian as the guardian of the public health from this standpoint has been given serious consideration, even in scientific circles, and the ignorance of the general public of the sanitary work now being done by veterinarians and the sphere the profession is destined to occupy is incredible.

The efforts of the first organized health boards were directed against the more obvious causes of high death rates, such as cholera, yellow fever, smallpox and the various plagues; with the acquisition of the knowledge of the cause and prevention of these diseases and their consequent control, the sanitarians have been directing their energies to the control of the more insidious diseases, which, while not so spectacular and terrifying as the plagues of old, take, nevertheless, their yearly toll of thousands of human lives, and to-day every factor which may possibly contribute to increase the death rate and impair the general health, is receiving the careful scrutiny of scientific minds.

The number of veterinarians now employed by civil, state and municipal governments, as sanitary officers in different capacities, is very great, and as the science of sanitation advances and becomes more specialized, the services of the veterinarian, as a sanitarian, equipped for his duties by education and training, as he has never been before, will be considered absolutely indispensable. The city of New York now requires from every dairyman bringing milk within its limits for sale, unless from a tuberculin-tested herd, or exclusively for manufacturing purposes, a certificate from a graduate veterinarian, that his herd has been examined physically, all diseased animals excluded, reported to the state authorities and proper disinfection done. As the milk supply of this city comes from many different states, and represents approximately 2,000,000 quarts a day, it will be seen that employment will be given many graduate veterinarians. The difficulties of making an accurate diagnosis by physical examination are very great; but if the examinations are made conscientiously, a splendid opportunity will be given a great number of men to

perfect themselves in this mode of diagnosis and also of exercising their function of educators by instructing the dairymen of the importance of interior stable construction susceptible of disinfection, which many of the old barns are not.

It is known that a multitude of diseases of animals are communicable to man, that many of them, if not promptly controlled, while not necessarily causing death, would seriously affect human health, and that one, at least, tuberculosis, is responsible for the deaths of many thousand human beings yearly. The task of controlling and if possible eliminating this source of human infection, rests principally with the veterinary profession. All other things excluded, the successful accomplishment of this duty would justify its existence.

The rapid increase of this disease among animals, the wide diversity of opinion as to the methods of control which should be pursued, the adoption and subsequent abandonment, as impracticable, of various systems of eradication, all indicate the magnitude and difficulties of the problem, and learning from the experience of the medical profession, in its efforts to control human tuberculosis, it is safe to conclude that the subject must be approached from many different standpoints, giving opportunity for the intelligent co-operation of the veterinarian, the farmer, the consumer, and the commonwealth. It has been said that public health is purchasable; this is especially true of public health as influenced by animal disease. The willingness of the consumer to pay the additional price of milk from tuberculin-tested herds, and of the commonwealth to liberally share with the farmer the losses entailed in eliminating the reactors, will have much to do with its ultimate control.

The opinions of prominent investigators expressed at the Seventh International Tuberculosis Congress, held in Paris this spring and transcribed from the pages of the AMERICAN VETERINARY REVIEW, indicate that bovine tuberculosis is transmissible to man, especially children; that about 10 per cent. of the cases of human tuberculosis proceed from an infection by bovine tuberculosis; that while the majority of cases of human tubercu-

losis proceeds from contagion between human beings, it is necessary to maintain entirely, and even increase the precautionary measures already taken against bovine tuberculosis. These words are a call to arms, to the veterinarians of the world, and will arouse them to greater and more united efforts against this disease, as well as to awaken health authorities and the general public to the need of more effective regulations, and of scientifically-trained veterinarians for their enforcement.

Thousands of infants are sacrificed each year through the use of filthy milk, so dirty in the past, that an authority has stated that a sample of market milk taken a few years ago in one of our large cities contained more bacteria per cubic centimeter than the city sewage. Such conditions, fortunately, are things of the past; but the crusade for wholesome milk is nevertheless in its infancy. Involving in its production and distribution so many difficulties, depending so much upon the intelligence of the producer, the guarantee of its purity and wholesomeness must needs be a function of the government. Only graduate veterinarians from approved colleges are considered competent by the United States Government to pass upon the wholesomeness of meat, which no less an authority than Dr. Evans, ex-Health Commissioner of Chicago, and one of the foremost sanitarians of the day, says, in substance, kills a few people yearly, where unwholesome milk kills thousands. How, then, can anyone, but a veterinarian, be considered fit to adequately perform the duties of a dairy inspector? In addition to his definite knowledge of the diseases of cattle; of stable sanitation, of milk from the standpoint of a laboratorian, all essential, he is in a position to command the respect and attention from the dairymen, due and given only, a professional in the campaign of education so necessary in this question of pure milk. A layman who has qualified for the position of dairy inspector, by having passed a civil service examination, involving the correct answering of a few stereotyped questions, and possessing no scientific knowledge of the subject which he is expected to teach, can do and frequently does, as I know from personal knowledge, more harm than good. The produc-

tion of wholesome milk so essential to the public health, is acknowledged to depend more upon cleanly careful methods of handling, than upon expensive equipment. The encouragement of a higher price is probably necessary to arouse the producer to the greater effort necessary, but those who are ignorant of the ease with which milk is contaminated in every step from the udder to the sealed bottle, and there are many, need careful and authoritative instruction, and I venture to repeat that no one is so well qualified to give it as the veterinarian, and I believe it is he who will eventually be called upon, almost exclusively, for this service.

An authority on human tuberculosis of national reputation recently stated that one of the most important factors in the crusade against that disease was the elevation of the index of resistance of the individual. Of probably more importance than any other thing in its accomplishment, is an abundance of nourishing food, meat and milk. The efforts, therefore, of the veterinarian, in stimulating the breeding interests, as he is doing in the south, in eradicating Texas fever, and all over the United States, in laboratory and field, by continually minimizing the losses due to the many destructive infectious diseases of flesh-giving animals, bear a direct influence upon the public health through the abundance of the food supply.

The newer methods of laboratory diagnosis of glanders, the reliability of which has been demonstrated beyond question, will, if used for legitimate purposes, be of immense value in controlling and eradicating this disease. The number of humans who die each year from glanders is relatively small; but as a disease infectious to human beings, usually terminating fatally, and most often claiming as its victims, veterinarians, it may properly be referred to in this paper. The attitude of the practitioner towards glanders is a factor of greater importance in its ultimate control than in any other infectious animal disease with the possible exception of tuberculosis. Such diseases as anthrax, hog cholera, rabies, black-leg, Texas fever and many others, have a rapid and usually fatal termination and produce symptoms and conditions

which would obviously prevent any extensive traffic in the affected animal. Glanders, on the contrary, slightly impairing in many instances, the commercial usefulness of the animal affected, and causing symptoms easily overlooked by the laity, is spread from state to state through the traffic in latent and chronic cases. Judging from statistical reports there are many sections of the United States where glanders is practically unknown, and it should be the object of every veterinarian to prevent its introduction into these territories.

With the practical demonstrations which have been given of the possibility of its eradication through the means of suitable measures of control, a heavy responsibility rests upon the practitioner to report to the proper authorities every case with which he comes in contact, be it latent or active, letting the responsibility for any neglect to make use of all known precautions against its spread rest with those who are intrusted with the administration or enactment of the law. Such responsibility cannot be long evaded if veterinarians individually and collectively through the medium of their societies use their influence in proper channels.

This statement applies generally to all infectious diseases of animals. While the law in many states requires the reporting of infectious diseases by any citizen who may be aware of its existence, failure to do so is often the case through ignorance of the law or because of a lack of a due sense of responsibility. This cannot be the case with a graduate veterinarian and so far as it relates to the non-graduate, ignorant and often unmindful of the law, owing no responsibility to Alma Mater or Veterinary Medical Association, one of the best reasons exists for the legal prevention of his practice.

The practitioner is the wire completing the circuit between infectious disease and the legal machinery for its suppression. Let him fail in any respect in the performance of this duty and the most effective laws are nullified, and where none exist the day of their enactment is indefinitely postponed, giving opportunity for infectious disease to obtain a foothold, which will not be easily uprooted. In sanitary medicine, the old adage: "An ounce of prevention is worth a pound of cure," has especial application.

The interchange of visits at medical society meetings between veterinarian and physician is a practice which should be more generally followed. The veterinarian by attendance and participation at the meetings of associations for the control of tuberculosis, at city milk committees and kindred bodies, will learn much of value to him in the performance of his duties as a public health officer and practitioner, and the leading physicians and sanitarians of whom these societies are usually composed, will be favorably impressed by the interest shown in sanitary medicine by the veterinary profession. For the same reasons, the reading of papers by physicians upon subjects of common interest at veterinary society meetings is greatly to be desired. The mingling of the two professions in a field of common endeavor will do a great deal to wipe out the prejudice of the medical profession against the veterinary profession by giving its members opportunity to judge by personal contact and observation of the class of men who are striving for the advancement of their profession and of their fitness to take a prominent part as co-workers in sanitary reforms. The good that the veterinarian can accomplish, especially in sanitary matters, depends greatly upon the degree of confidence reposed in him by the public, and this is measured by his ability and honesty. Every act of the individual, be it honorable or otherwise, efficient or inefficient, redounds to the credit or discredit of the profession at large, strengthening or impairing that confidence. It is, therefore, the duty of every veterinarian, putting all personal considerations aside, to refrain from any act which would tend to lower the standard of the profession or to impair the growing confidence in it, and to keep abreast of the advances in medicine and sanitary science, to the end that his profession may attain that high place of honor among the learned professions to which its legitimate functions entitle it.

OPENING FOR FIRST-CLASS VETERINARIAN: Welch, W. Va., wants to get a first-class veterinarian to locate there. Address I. J. Rhodes, Cashier, McDowell County National Bank, Welch, W. Va.

STUMBLING.*

BY JAMES McDONOUGH, D.V.S., MONTCLAIR, N. J.

The horseshoer and veterinarian, when trying to stop a horse from stumbling, have the time of their lives trying to keep the one from trespassing upon the domain of the other. This is probably due to the fact that neither is quite sure where the duties of the one begins and the other ends. So I trust that the two will pardon me if while trying to say a few words to both I fail to arrange my subject in a way that is clear to either.

As the task of overcoming the fault of stumbling required not alone the skill of the veterinarian, but also the practical knowledge of the shoer, I will not attempt to divide their responsibilities while allowing them to share the honor.

While working at horseshoeing I often felt like saying to veterinarians what I am going to say to you now. When treating a lame or stumbling horse, if you order a shoe of special design, know what you want and know when you get it, then stand for the results; don't shift the blame upon the shoer.

The term "stumbling," as applied here, is misleading, as it would lead one to believe that the cause existed in the free limb, while as a matter of fact it will be found to exist in the fixed or supporting limb. We have different kinds of stumblers. Some horses will make what we call a "miss step"; some will fall to the extent of striking one or both knees against the ground, while others will plunge forward, striking their nose and face, or even the top of their heads. While this difference in stumbling is merely one of degrees, it nevertheless is deserving of attention. When a horse stumbles, the toe of the free limb comes in contact with the ground at a time when it is being extended or carried forward as shown by the mark found upon the hoof at that point.

* Read before the Veterinary Medical Association of New Jersey, at Jersey City, July, 1912.

Therefore we have always been led to believe that it was caused by the horse carrying his foot too close to the ground, and for this reason shod him with one of two objects in view., *i.e.*, increase his action by applying a heavier shoe or shortening the toe by rasping away the hoof at that point.

When we now fail to stop him, as we usually do, we remind the owner of the old adage,—“Once a stumbler, always a stumbler.” But let us return and try to determine the cause of the difference in the degree of stumbling. The first thing noticeable is the difference in the marks found on the front of the hoof. Upon the hoof of the animal that made what we called a “miss step,” you may not find any mark, but a little earth on the toe of the shoe. An examination of the hoof of the animal that nearly fell will show a mark extending nearly the entire length of the toe. While the animal that fell will not only show a mark extending the entire length of the hoof, but also into the coronet above and oftentimes to the front of the ankle joint. This animal, while falling, may be seen to make one or more desperate efforts to regain his feet. His expression shows fear and excitement. The free limb, the one he was carrying forward at the time he stumbled, now seems to be fast and in a position where he cannot possibly extend it. It was fast from the beginning, otherwise his first efforts to extend it would have been successful, as was the case with the preceding animals. To those who have watched a stumbling horse fall it became evident that the limb was forced into a position where the animal was powerless to release it. This could only be accomplished by the animal's weight having been thrown upon that side before the limb had reached a position to receive and support it.

As the fixed limb is intended to support all of the weight of the front part of the body until the extension of the free limb is completed, its failure to do so, as shown by the animal whose free limb was forced against the ground, should influence one to look there for a cause, where we will usually find it.

If, when riding behind a frequent “stumbler” we closely watch the supporting limb, we will notice a slight flexion of the

knee just as the animal stumbles. This is caused by the presence of some condition, either pathological or mechanical, that renders the limb unable to support the body weight with comfort, and as a result it yields to the pressure and permits the body to drop to the extent of allowing the toe of the opposite limb to strike the ground when being carried forward. The consequence will depend upon the position of the free limb at the time the supporting limb gave way. Should the free limb occupy a position just anterior of the supporting limb, the animal will make a quick move and get it forward in time to catch and support the weight of the body. We call this a "miss step" or slight stumble, and a little dirt may be found upon the toe of the shoe. Should the free limb occupy a position in a line with, or slightly behind the fixed limb, a portion of the front part of the hoof will be forced against the ground and the animal's efforts to regain his feet will be unsuccessful to the extent of allowing one or both knees to become injured, and we call this a "stumbler." Should the supporting limb give away at a time when the free limb was about to be extended, the position it now occupies causes that part of the limb from the ankle down to be forced against the ground, making a mark, extending the entire length of the toe, also injuring the coronet and ankle joint. If we closely examine those injuries, we will often find they were caused by the foot having been forced in a backward direction or just the opposite to a condition that would be produced if caused by the animal pulling the limb forward. This animal will be seen to plunge and while falling make several efforts to free the limb. He usually goes down by plunging forward, and if the driver pulls hard upon the "lines" in an effort to hold him up he may prevent the animal from extending his neck and cause him to strike upon his face or even the top of his head.

When the free limb reaches the ground and becomes the supporting limb, its direction is oblique from above to below, and from behind to before. During the extension of the free limb the body is moving forward upon the supporting limb, which moves first to a vertical, then to an oblique position, from before

to behind. As his change in the position of the fixed limb takes place the work of supporting the body is transferred from one part of the limb to another, so that the part subjected to the greatest strain can be determined by the position of the free limb at the time he stumbles, and as the position occupied by the free limb can be accounted for by the degree of stumbling, we are led to believe that the supporting limb occupies a vertical position in all cases where the animal does not fall to the ground. This is usually caused by an unbalanced limb when the shape of the hoof or the position of the shoe is such as to force the ankle to either side. Of course, any condition that may render the limb unable to perform its work with comfort will cause a horse to stumble. But in either case whether caused mechanically, or by some abnormal or diseased condition of the limb, our one object must be to change the weight to some other and stronger part. When it is caused by an unbalanced foot remember what was said upon the subject of interfering. If the ankle is inclined to the inside, increase its support in that direction by widening the shoe upon that side, when it will be found that the condition has been relieved. If not entirely corrected, and we dare not widen the shoe further to the inside, we will then fit it narrower upon the outside until the condition is entirely corrected.

When a horse loses all control of himself and falls, I do not believe that it is caused by any faulty condition of the limb, which seems to give way at the time it first comes in contact with the ground, and is probably caused by the animal stepping upon a loose stone or into a hole.

It is probable that 90 per cent. of all stumbling is caused by an unbalanced limb, for when a diseased condition is present it is likely to cause lameness and lame horses are not always "stumblers," for the animal will save the affected limb while traveling by preventing, to some extent, the weight of the body coming upon it by holding his head and shoulders up when that foot comes upon the ground, while the head and foreparts will be allowed to drop when the weight comes upon the good limb.

As many methods are employed by different people to balance

the limb a few words upon this subject may be excusable. At every step when the weight of the body is transferred from one front limb to the other the body is falling and nothing but the timely arrival of the opposite limb to a position where it can catch and support it will prevent its falling to the ground.

The limb was intended to perform this work and nature provided it with the necessary strength, not alone while in a given position, but so arranged and adjusted its many parts as to permit of a change in its position without detracting from its strength or comfort.

Inasmuch as we are now trying to adjust the parts in a way that will stop stumbling and not for the purpose of relieving lameness, there are some things that I wish to make plain. First, that the ligaments play a very important part in preventing or at least limiting motion of the joints to either side, while permitting in many cases extreme flexion and extension, while the muscles and tendons have full control over flexion and extension. Second, that the ligaments are non, or very slightly elastic and unable to adjust themselves to an abnormal position, while the tendons which are a continuation of the muscles possess the advantage oftentimes of being able, through the medium of the muscles, to adjust their length to the extent of escaping injury.

When the extended limb first receives the weight of the body, the direction of the weight is from above to below and from before to behind with a tendency to force the limb backward and downward and in the direction of the very strong and more or less elastic organs found there. The foot being fixed upon the ground, as the body moves forward, the direction of the limb approaches a vertical position and the weight now passes through its center and through that part of the foot known as the quarters. It has now reached a position where the quarters must be depended upon to support it upon either side, and if for any reason insufficient support is given to the one side, the limb will suddenly be displaced in that direction, and the injury to the ligaments will often compel the animal to yield to the increased strain.

While considering the limb in a vertical position, if the distance of the two heels from the center of the frog is not equal, the limb will drop in the direction of the narrow side. This also applies to pads, for if the center of a pad is not under the center of the frog, the limb will be inclined to the narrow side. It does not make the slightest difference how wide the pad is on the one side if the other side is wider it offers more support to that side of the limb and will cause it to lean in the direction of the opposite side, where it receives the least support.

So far as I know one has to depend entirely upon his eye when balancing a limb. The custom is to measure the foot at several places, but as the position of every part is dependent upon its shape, it leaves us without any fixed point from which we can take measurements. The better way is to pick up the opposite foot, thereby throwing all of the weight upon the limb to be corrected, and if the ergot found back of the ankle occupies a position directly over the depression between the bulbs of the heels, we can feel that the work of the limb is properly distributed.

Stumbling behind (breaking over) is usually caused by some condition existing on the inside of the hock joint that renders it unable to perform its work with comfort, and can often be accepted as an early symptom of an approaching spavin.

In most cases, the foot will be inclined to the outside, thereby increasing the work on the inside of the hock joint.

I have tried many different methods of shoeing to overcome stumbling behind, and have had the most success with a long shoe provided with low heels and toe, with a calk situated at either side under the quarters. When fitted, if the foot is inclined to the outside, it might be well to fit the shoe full on that side, or narrow on the inside.

THE CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION will hold its next meeting, September 11, 1912, at Fresno, and a large attendance of the members of this progressive organization is anticipated.

THE BROADER FIELD OF THE VETERINARIAN.*

By A. JOLY, D.V.S., WATERVILLE, ME.

The veterinarian of to-day has a vast field of operation, when one stops to consider the different important questions he is called upon to solve.

I will not take up your time in reviewing with you what the veterinarian has achieved in this great country of ours, neither shall I bring before you the different specialties embraced by the veterinary profession all through the United States; but I wish to call your attention to certain daily work which belongs to us, that is to say, of different problems which the veterinarian of Maine should emphasize to the public as being the best qualified citizen to handle. What are the positions in Maine which should be filled by the veterinarian?

1. That of Live Stock Sanitary Commissioner.
2. One member of the State Board of Health should be a veterinarian.
3. All cities should have a veterinarian on their Boards of Health.
4. Milk inspectors should be veterinarians.
5. Judges of live stock at our State Fairs should be veterinarians.
6. Agents for the prevention of cruelty to animals should be veterinarians.

During my 22 years of practice I have been in contact with the veterinary profession of this state. I know its material, and it is with pride that I can say that the Maine Veterinary Medical Association can furnish men to fill the different positions that I have enumerated above.

Thirty-eight states out of forty-eight have a state veterinarian. For political reasons, it is assumed, our Governor has appointed a farmer as Live Stock Sanitary Commissioner.

Some two years ago at a conference on tuberculosis held at Augusta by the State Board of Health, three veterinarians were present, having been invited to assist in the study of this great

* Read before the Maine Veterinary Medical Association, at Augusta, April, 1912.

question of the "White Plague," thus recognizing the veterinarian as a sanitarian.

Having no special meat inspection in the state, it is up to the local Board of Health to stop the sale of diseased meat; again, how can it be properly done without the veterinarian?

The fluctuation of density and the amount of butter-fat of milk, caused by feeding different forage, cannot be better understood than by the veterinarian.

How much incompetency has been exhibited at the judging of livestock at our state fairs, by men prejudiced against certain breeds of animals, when a competent veterinarian would be above such criticism?

It is true we may find one or two local boards of health with a veterinarian, also two or three veterinarians as milk inspectors through the State. Once in a while a veterinarian is called to judge at our fairs, but this is rare.

I feel, fellow veterinarians, that it is up to us to make room for competent men. Get into politics, municipal and State politics; fight for what you think is right; subscribe liberally and take interest in all local enterprises, which aim at public welfare, such as the Anti-Tuberculosis Society, Good Government Association, etc., etc.

With pleasure I acknowledge the facts that the Maine Breeders' Association has for its president a veterinarian, in the person of Dr. John Ness; also the University of Maine has Veterinarian Russell as one of its teachers.

We have a society in the State, with which I have been connected for 20 years through our local organization, and it seems to me that it ought to appeal to every veterinarian. It is the *Society for the Prevention of Cruelty to Animals*.

We all agree that the state society has done and is doing great work; but I feel that the time has come where its executive agents should be in the rank of our profession.

During my connection with the Waterville society, I have come in contact with several state agents; and while these men and women are doing their best and are sincere in their efforts,

very few are competent to fill the office. I will cite a few cases which just come to my recollection to illustrate the incompetency of some agents.

In the town of M—— an agent notifies a person that his horse looks bad—old and weak—and in order to save trouble he better have him killed. The owner called a veterinarian, who found the animal thin in flesh very true, but properly cared for, and valued the beast at \$75.00.

In the town of A—— an agent notifies a party that everybody is complaining of his old horse as having the glanders and he should have him killed before the society of the long name causes him any trouble. A veterinarian is called and no symptoms of glanders are found.

Some time ago a party from Freedom drove into Waterville with a very lame horse. An agent takes the team to a livery stable and the driver is arrested for cruelty to animals. I was out of town, and just before the court opened I was called to examine the horse. The agent under oath testifies as follows: describing the horse as being old, poor, hip knocked down, spavined and chest-foundered, and of course worthless. My testimony did not exactly agree with the agent's. The horse was twelve years old, of a nervous temperament, fair condition, and the lameness was caused by a recent interference. Horse valued at \$100. The defendant was discharged.

Just one more case. One morning an agent is called to examine a horse which, during the night, had gone through the stable floor, on a pile of manure, and after vain efforts to get up where there was no chance nor room to stand up, one can easily make a picture of the animal. He was condemned and destroyed. The owner, during whose absence the incident occurred, sued the agent and got a verdict of \$75.00.

I could cite you many other cases of incompetency which have been nothing else than an imposition upon the public and a great annoyance to individuals.

Now, I wish to explain to you the manner in which the Waterville society conducts its business, and I want to say right

here that every city or large center should have a similar organization.

Our society is composed of about 100 members, who pay annual dues of one dollar. It has a president, vice-president, a secretary, a board of five directors and one veterinarian.

Every member is an agent and his duty is to report to the president all complaints of cruelty. We have agents in something like 20 towns. All complaints are investigated by the veterinarian.

For the last ten years an average of 80 complaints per year have been attended to. An average of 20 horses a year have been bought by the society and humanely destroyed. The fees of the veterinarian are paid by Kennebec county, which is in accord with our state laws, for it is in the hands of the County Commissioners to fix compensations. Our bills have always been approved and many times we have received expressions of appreciation.

Negligence of proper care to animals is largely caused by ignorance and poverty. Our work has been and is through proper instructions; a campaign of education is followed; and while our main object is to prevent cruelty to animals, justice and fairness should not be lost sight of. The anti-cruelty cause stands for Mercy, Justice and Righteousness. Its only creed declares that all life is entitled to humane and kindly treatment. It holds that the great advancement of mankind through the ages has been measured by the increase of humanity and the decrease of cruelty, for it maintains that knowledge alone does not make men better; but that kindness and humanity added are vastly more essential.

OWING to a temporary indisposition on account of intense heat, Prof. Olof Schwarzkopf will not be able to conclude his article on breeding problems this month, begun in the August REVIEW, but will do so in a following number. The doctor informs us that the heat at Fort Sam Houston is ranging between 100 and 105 degrees.

SANITARY DAIRY INSPECTION.

BY L. M. STECKEL, D.V.M. (O.S.U.), NEW YORK, N. Y.

In the discussion on dairy inspection at the International Veterinary Congress at The Hague, a resolution was presented to the effect that only veterinarians should serve as dairy and milk inspectors. Prof. Ostertag, Veterinary Director General of the



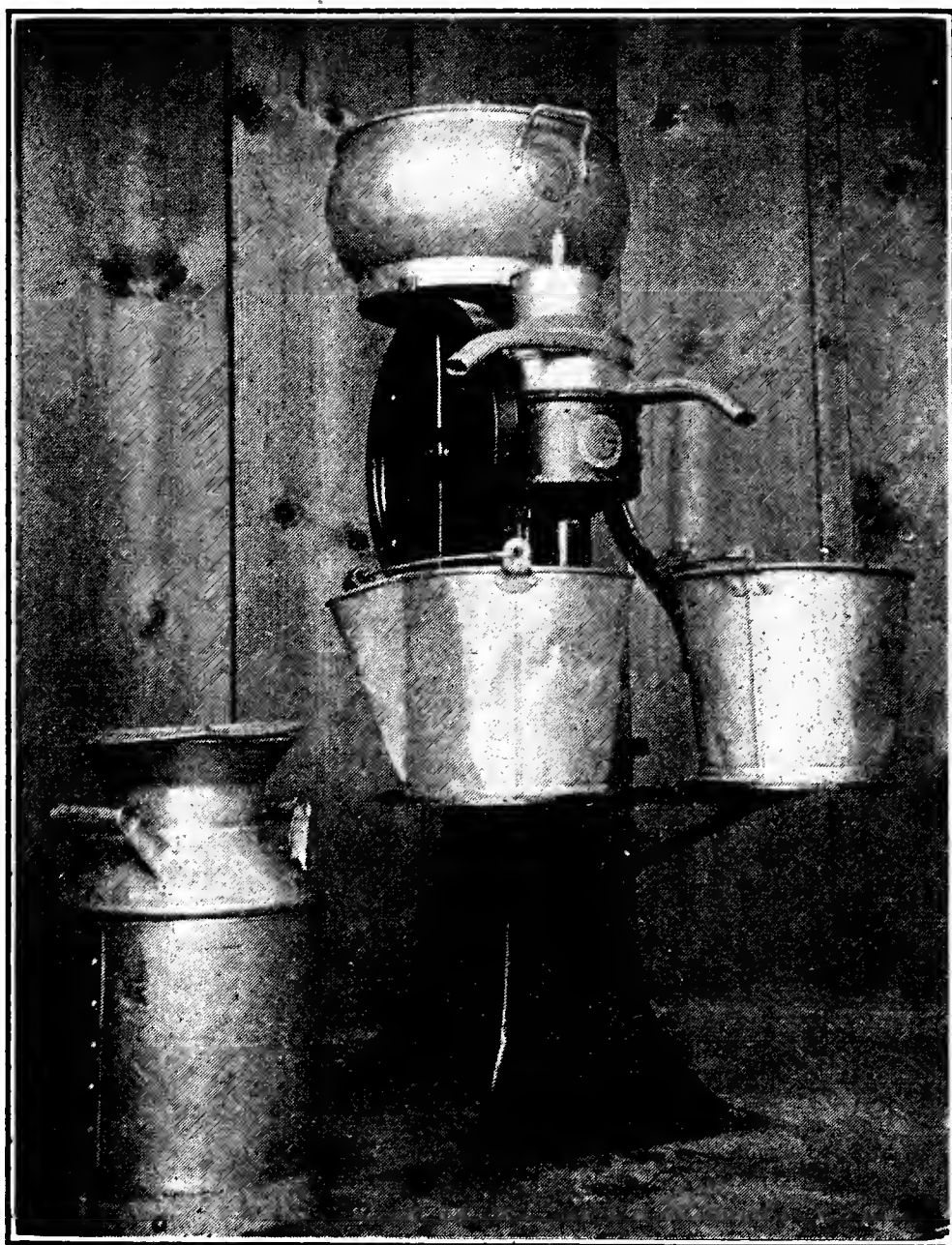
1.—A plain, serviceable milk-house.

Imperial Health Department, Berlin, took exception to the wording of the resolution and modified it to read that qualified men only should act as inspectors. In this case, said the professor, we will avoid the ire of our agricultural friends.

When real dairy inspection is to be carried out, when a thorough physical examination of the milch cattle is to be made, there is no question but that a veterinarian trained in the diagnosis of diseases in animals should be the proper person for this work. While any one with a knowledge of dairy cattle and dairy sanitation can assist in the inspection, it should be understood that

this man acts as the sanitary inspector under instruction and advice from the veterinary dairy inspector.

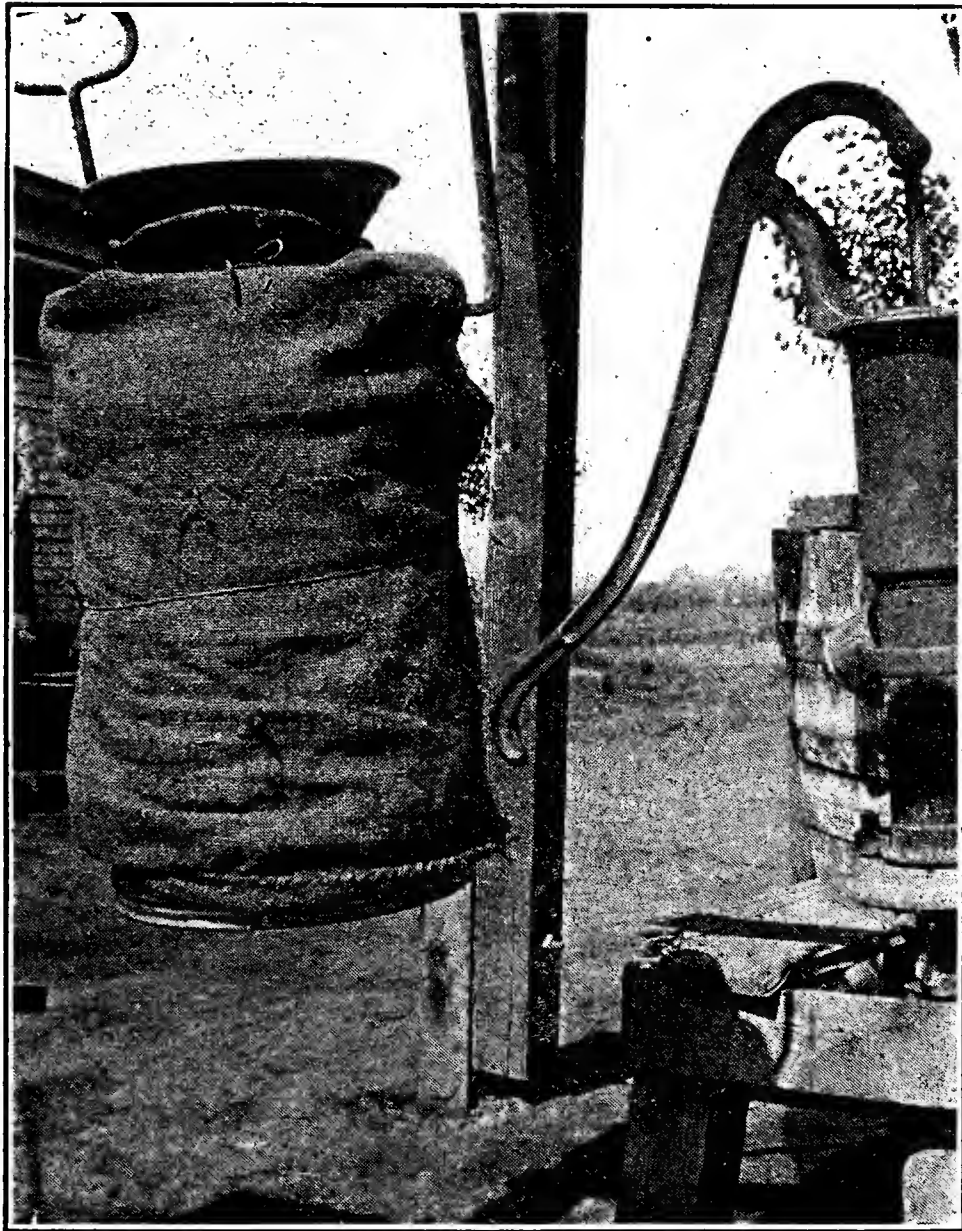
To inaugurate and carry out effectively a thorough system of dairy inspection in those states where, up to the present, it was known by a statute only, it is best to arrange the inspection work by counties and work in a radius around the creamery, con-



2.—Interior of same, with cream separator, pails and milk-cans.

densary or milk plant. During the first and probably the second round of inspection make clear to the dairymen (whom you will find have a very vague idea of what inspection means), the exact nature of the statute and the reason for such. In other words, take the men into your confidence. Try to enlighten instead of frighten. Be as much of an instructor as an inspector.

The work of the inspector will not be counted by the number of arrests made (court proceedings cost time and money), but by the actual results obtained in the improvement and building of barns and milk houses, the elimination of diseased cattle from the herd, the cleanly milking, the cooling of the milk and cream,



3.—A crude method of cooling milk and cream by a Southern California farmer. The can with the milk and cream is suspended on hooks, covered with a sack which is kept wet; as the sack dries, the process of evaporation keeps the contents of the can cool.

and the gradual scale of points gained from the first to the second inspection. Give the dairyman a stated time, say thirty days, or as conditions may warrant, to make the necessary improvements. Learn to discern between the one who wishes to comply with the law, as soon as he finds out what is to be done, and the one who tries to get around the law by excuses and delays.

As personal experiences I will cite the following:

On entering the premises of one dairyman, I told him my business and started to look things over. The man had a tuberculin-tested herd, a fair stable and a milk house. In the milk house he kept an old set of harness. When I told him that the milk will surely do no damage to the harness, but that it would be best to remove the latter, he grasped the situation and gladly acquiesced with my order. This same man told me that at a previous time he was very bitter against inspection in general, that he moved to this place to escape the pesterings from the milk inspectors.

I inspected the premises of a Mr. B., who was the proprietor of the creamery. He himself did not live on the farm. I found no milk house and left an order that they build one. The tenant then said that for twenty years they got along without it; and I replied that it was just twenty years too much and that it better not continue for twenty-one years. An interview with the owner followed and the next week the milk house was built.

A woman farmer known all around the county for obstinacy in not obeying the law, was told by me to clean up the premises and that the only alternative for her to be allowed to sell milk and cream would be to send for lumber that very afternoon and commence to build a milk house. The order was so peremptory that even this woman thought it best to execute.

Though it is often necessary for an inspector to resort to orders like the above, in the majority of cases diplomacy and tact are the main requisites for the successful carrying out of his campaign. Always make it a point that the creamery, condensary, or milk plant be clean and sanitary; also do not overlook the surroundings, as it is the outside appearance which impresses most the dairymen when they bring the milk or cream. Never be too hasty when making an inspection. Show the man where he will profit by the improvement and he will soon learn to take you as a wise counselor instead of a cursed admonisher. A good policy is that no matter how you were received, take your leave in a pleasant and cordial manner; at the same time leave the impression that your orders mean business.

MY EXPERIENCE WITH ANTI-HOG CHOLERA SERUM.*

BY DR. E. E. BLACK, COLFAX, IOWA.

In the beginning I will say that I consider the serum to be of great benefit to growers of swine, but that its use among the farmers where no two herds are kept under the same circumstances of conditions will not give as successful results as the tests that are being conducted by private firms as well as by the government.

I began vaccinating about the first of July and am still using the serum, although not as much as earlier. I vaccinated three herds in one immediate neighborhood where the cholera was the strongest before any of the three showed infection. These three men have undergone the outbreak without one sick animal, while their closest neighbors have all had the disease in their hogs. This would go to show that without a question of doubt that the serum is absolutely prophylactic. Many other herds were vaccinated while still healthy and still remain so, but I cited the three above especially on account of their being in the thickest of the outbreak.

My results where the infection already existed have as a whole been very favorable. I will relate only a few typical cases.

In one drove of sixty shoats and twenty sows I was called after four or five had died, and perhaps eight or nine showed symptoms of cholera. All the live ones were vaccinated and since only about fourteen have died, including the nine sick ones, and perhaps the other five had the fever when vaccinated. I have not made a practice of taking temperatures before vaccination, although no doubt it is best if time is not too valuable.

Another drove was vaccinated immediately upon the discovery of one sick shoat, which died on the morning of vaccination, and not another case of cholera developed. There was no doubt but

* Presented to the Iowa Veterinary Association, Cedar Rapids, November, 1911.

that this one that died had genuine cholera, judging not alone of the pathological changes, but in part from the fact that the neighbor across the fence lost all of his young hogs with the disease. Another drove of sixty-five was vaccinated where about a dozen had died and the ravages of the disease were checked by the loss of only three more.

I could give many more examples like the above but do not care to take your time on specific cases, but will say as a whole that in no cases where I have vaccinated before the infection was present, has it ever made its appearance, and in every case where it was present I was enabled to check it reasonably soon after vaccination.

In all of my vaccination I used the single method. On account of using the single method I find that after vaccinating an infected herd, one will become sick occasionally, but will recover. This I attribute to the reaction which brings about the lifelong immunity caused by the hog taking into his body large doses of the infection secured by natural methods.

One question I would like to hear discussed is how long does immunity by the single method last, providing the infection does not become present. Some reports say that the protection runs out in three weeks, but my experience is that, so far, I have had it last for over four months in five different herds and in several more for two or three months.

About fifteen weeks ago I started a test by vaccinating two healthy shoats weighing about fifty pounds each and placing in a bunch of hogs where all that took sick died, some we sold and the remaining old sows died, so it certainly looks as though a very virulent form of the disease was present. To-day these two pigs are as healthy as can be, and have slept continually in the pen where all died. One of them showed the disease, which kept her off feed for about three days.

I am at present conducting another similar test, but it is so recent that results cannot be ascertained.

One more thing I wish to mention is that there is undoubtedly a strengthening by vaccination to the whole system in apparently

healthy hogs because practically all have told me that their hogs picked up and have done better since vaccination.

I would like to hear the subject discussed more thoroughly, but will say from my experience that I consider vaccination a great success and a treatment that will always be used.

NINE RESOLUTIONS were offered at the Utica meeting of the New York State Veterinary Medical Society and unanimously adopted. The last five were as follows:

Whereas, the subject of sanitary inspection is assuming such importance in the preservation of the health of the community and whereas the local communities are unprotected from unwholesome food products, thereby endangering human life; be it

Resolved, That this society again go on record in recommending state, as well as local meat and milk inspection by veterinarians.

Inasmuch as there is a decrease in the number and quality of the horses in the state of New York, due in a large measure to improper and unprofitable breeding, and,

Whereas the conditions may be improved by the introduction of stallions of suitable breeds and quality; be it

Resolved, That this society use every legitimate means in conjunction with the New York State Breeders' Association and the New York State Horse Breeders' Association to bring about a stallion regulation law.

Whereas, the office of Commissioner of Agriculture is subject to change of administration, your committee recommends the indorsement by the society at this session of the resolution adopted a year ago, establishing a Live Stock Sanitary Board and the office of State Veterinarian.

Resolved, That we here assembled recommend to the legislative committee that they again have introduced in the Legislature the proposed amendment to the Veterinary Medical law, as introduced at the last session.

Your committee desires to place the society on record as being in favor of amending the agricultural law relative to the eradication of tuberculosis in such a way that it will be possible to remove the obvious and suspicious cases from the dairy herds of the state.

THE TREATMENT OF PNEUMONIA OF THE LUNGS IN HORSES, WITH SEA-SALT SOLUTION.*

BY A. T. PETERS, SPRINGFIELD, ILL.

In view of our observation that the blood of animals affected with pneumonia become reduced in the amount of alkalinity the moment the temperature rises, and continues as the progress of the lungs become involved, the author came to the conclusion that the alkalinity of the blood and the rise in temperature are in close connection with one another, also that the extent of the affected alveoli (an atonic condition of the bronchial blood vessels) are influenced under these conditions; consequently as these processes develop you get a weaker pulse. Therefore when the blood can be kept sufficiently alkali the diseased process in the lungs cannot progress with that pernicious energy as before. Now, when the blood of diseased animals is injected with an alkali solution the tone of the lungs will change and it will have the power to energetically resist the disease. For this purpose sea-salt seems to be the most adaptable medicament, which has been used in the human practice with very good results in special cases. To receive rapid therapeutic effect the author used a simple 1 per cent. solution in place of ordinary normal salt solution. The treatment was begun on twenty-five horses affected with pneumonia in the Artillery Corps of Russia. Of these twenty-five, eight were severe cases, three light, twelve with slight lung processes and two with complications of enteritis and complications of pleuro-pneumonia. On account of sea-salt containing a large amount of iodine it cannot be sterilized by heating on account of the rapid evaporation. Therefore I filter it through a cotton filter. In this way the author prepares a fresh 1 per cent. solution. The following apparatus is required: Rubber tubing and trocar, so that it can be easily inserted into the skin at the neck.

* Illinois State Veterinary Medical Association, Springfield, July 9, 1912. By Von W. Tschistjakoff, Veterinarian to the Artillery Corps of Russia. Translated into the German by G. Stange, *Berliner Tierärztliche Wochenschrift*, April 11, 1912.

In applying the solution an assistant is required that will hold the funnel at an elevation so that it can be inserted by gravity. All of this has to be naturally done under aseptic conditions. It is advisable to warm the solution slightly before injection, to receive a more rapid assimilation. I start my injections with 200 cubic centimeters and gradually increase them to 500, 800 and 1,000 cubic centimeters, according to the intensity of the pneumonia process, and then gradually decreasing the dose so as to avoid shock. The injections were made every other day. These injections, or more correctly infusions, are not accompanied with any pain or swelling or abscesses. In the horses in group No. 1 with extensive lesions on both sides of the lungs, pleuro-pneumonia, with rusty discharge from the nostrils, temperature 103 to 105, pulse 80. The infusions gave very good results, for the extensive processes in the lungs and in the pleura were immediately arrested in their progress and in a short time were returning to the normal. In many cases after the second injection the appetite of the animals began to appear and the animals also began to lay down again. The horses of the second group with both sides of the lungs affected without the pleura being affected, the results were even more marked and very much quicker. The dropping of the temperature in this group was very marked and the dull percussion sound of the lungs after one injection in the same day went over to the tympanitic sound, which sound returned to the normal. In the group that were slightly affected where the temperature was only 102½ to 106 and to 107 with bronchials affected and tympanitic percussion and sensitiveness of the intercostal muscles, one injection was all that was needed to pronounce the animals sound. It was very interesting to note that the injection of 1 per cent. of sea-salt solution in contagious pleuro-pneumonia seemed almost as a specific. In two cases where the patients had been treated with all known remedies without results and the animals were losing ground continually and complications of a profuse diarrhea set in, after two injections of 200 cubic centimeters each of sea-salt solution brought about recovery.

REPORTS OF CASES.

THE CLINIC OF THE NEW YORK STATE VETERINARY MEDICAL SOCIETY.

CASE 1. *Presented for Diagnosis:* Aged bay mare; could not back out of stall voluntarily, seemingly complete lack of muscular control; paralysis of left lip and ear; extremities cold. There would be spontaneous recovery from these symptoms in a few hours. Owner traded the horse off between the attacks at one time, but the symptoms returned, and so did the horse. Recovery from the attacks lasts from a few hours to a few days. He apparently sleeps them off—seem much excited when coming out of the spells. Dr. George H. Berns was asked to diagnose this case. The doctor attempted to induce the symptoms by applying pressure on the jugular veins, but without success, although the circulation was obstructed for three or four minutes. The peculiar spells would come on while the animal was at rest. Dr. Berns concluded that the condition was possibly due to ballooning of certain blood vessels, causing pressure on the brain, due to a partial rupture of one of the walls of a blood vessel.

CASE 2. *Cat.*—Presented the night before the clinic, apparently suffering pain, and with the history that three others had presented similar symptoms and had died. This cat also died during the night, and was presented to the clinic for post-mortem. Dr. Fitch performed the autopsy, and found that there had existed in the small intestines a hæmorrhagic enteritis, involving the mucosa and submucosa, the lesions of which were well marked.

CASE 3. *Gray Gelding.*—One of four reactors to mallein and agglutination tests for glanders. This horse had been in intimate contact with three others that had reacted and afterward showed physical symptoms of the disease and were destroyed. The horse in question reacted positively to the mallein test in January and again in May, and had also reacted positively to the agglutination test; temperature normal and no physical symptoms of glanders

We wish to acknowledge the assistance of Drs. Shaw (Brooklyn) and Mulvey (Moore) in gathering the data for report of clinic.

except a "heavy" cough. Was destroyed at clinic, and "posted" by Dr. Fitch, when the following lesions were found: Glanders nodules in mediastinal lymph gland, and also slight lesions of bronchial glands. The case was of extreme interest and value to the rural practitioners, many of whom stated that they had never met a case of glanders in their practice.

CASE 4. *Black Gelding*, ten years old, discharging tumor with fistula on right cheek. Patient secured on operating table and Dr. W. L. Williams (who pronounced the condition an odontome), with the assistance of Dr. Webber, proceeded to operate. The tumor was of the third molar, and had pressed on and rubbed against the second molar, and worn away and denuded the periosteum, so that the second molar also had to be removed. Dr. Williams explained that the principal danger to be avoided in this operation was injury to the facial nerve. Local anæsthesia with cocaine was employed, and after diligent perseverance and skill had been persevered with for nearly two hours, the operation was brought to a successful termination. The bony tumor removed weighed one and one-quarter pounds.

CASE 5. *Chestnut Gelding*, six years old; "roarer." Left cartilage was paralyzed and the right one partially so. The Williams operation (using the Blattenberg burr) was performed on both sides by Drs. Frost and Eggleston. Horse in standing position in stocks, with head fixed in elevated position.

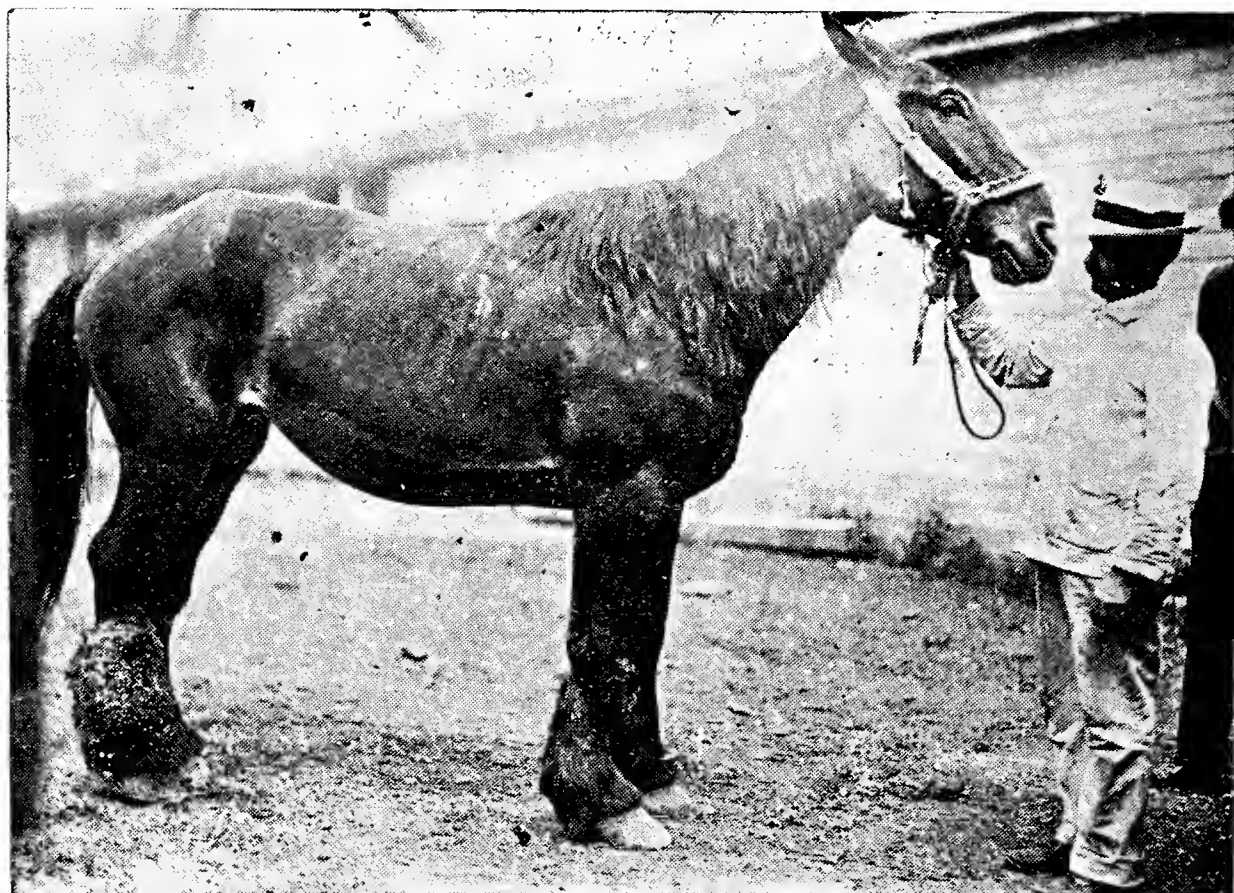
CASE 6. *Gray Mare* (aged), from practice of Dr. Huff, of Rome, presented for diagnosis. Drs. McKinney and MacKellar, diagnosticians. Has bog-spavin and ringbone on same member (off hind leg); very lame when worked. Dr. McKinney recommended firing and blistering the ringbone, and the "Hughes" operation for bog-spavin, on the upper part of the leg. The mare was placed on the operating table, and the operation (which consists of an incision through the skin, laying bare the saphena vein, dissecting that vein free for about an inch and a half, and ligating it), was performed by Dr. A. A. Bocket, under the direction of Dr. McKinney.

CASE 7. *Dark Gray Gelding* (mottled), four years old, presented by Dr. Currie for diagnosis. Dr. Cochran, diagnostician. Sprung knees, due to contraction of flexor tendons. Recommended shoeing with no toe-light heel. Prognosis—horse would be useful for some time.

CASE 8. *Bay Mare* (aged). Dr. Cochran, diagnostician, pronounced this case (which the accompanying cut illustrates) as traumatic lymphangitis. Prognosis: Will improve to useful con-

dition. Treatment recommended: "Planing" the surface with actual cautery and the application of tar-and-oakum and bandage.

CASE 9. *Brown Mare* (aged). Several veterinarians had examined this case and pronounced it obstruction of the air-passages by pedunculated tumor and other mechanical obstructions, recommending trephining, etc. Dr. W. L. Williams, on completing his examination of several cows, finally examined this mare and concluded that it was a "straight roarer." The doctor requested the owner to drive around the block at a good sharp pace, which he proceeded to do, but after some delay managed to



Courtesy of Saturday Utica Globe.

Case No. 8.

make his appearance at the fourth corner, his horse just able to move, and roaring so that he could be heard plainly the length of the block, a condition which lasted ten to fifteen minutes. The diagnosis was no longer a question.

CASE 10. *Black Stallion*, five years old. Castrated by Dr. McKinney—standing. Before the operation Dr. McKinney described his method of dealing with scirrhus cord, obviating the necessity of an operation, which is as follows: Split the cord back as far as it is indurated, and pack with bichloride of mercury powder (in some cases a combination of bichloride and powdered

arsenic), which will result in a slough of the cord without any further trouble. The doctor states it is not even necessary to remove the packing or dress the wound; it will drop out and the parts heal up.

CASE 11. *Bay Mare*—Poll-evil, presented by Dr. Currie. Operated upon by Drs. Eggleston and Frost.

CASE 12. *Chestnut Gelding*, nineteen years old. This case proved of special interest, having been operated on by Drs. Hollingworth and Baker at the clinic in Dr. Hollingworth's hospital at the last meeting of the state society in Utica, four years ago, for bone spavin; tarsal neurectomy being the operation performed. The great sciatic and anterior tibial nerves were divided at that time, and a grave prognosis given. The horse, (which is in the pink of condition despite his advanced years), was driven up and down the road and proved serviceably sound, with no bad results from the division of the nerve branches, after four years. His driver has no difficulty in making a fifty-mile round trip with him in a day and plenty of time to spare between the going and coming.

CASE 13. *Black Trotting Gelding*, lame in off fore. Dr. McKinney diagnosed the case as sesamoid lameness, and recommended firing and blistering and the use of an elastic bandage when working. Prognosis favorable.

In the following cases Dr. Williams was able to diagnose and describe conditions that he had referred to in his lecture on sterility the evening previous, and had illustrated with the lantern on the screen, from among his extraordinary collection of specimens.

CASE 14. *Holstein Cow*, had her last calf in July, 1910—although bred regularly since. Dr. Williams made out by examination per vagina, severe sinking of the broad ligament, external os œdematous; rectal examination further revealed the uterus somewhat enlarged; right ovary $2\frac{1}{2}$ inches in diameter, wall very thick, possibly an abscess; right oviduct $\frac{3}{8}$ of an inch in diameter, containing lymph or pus; left ovary $2\frac{1}{2}$ to 3 inches in diameter, encysted; left oviduct $\frac{1}{2}$ inch in diameter. Diagnosis, incurably sterile.

CASE 15. *Red Cow* (heifer, $3\frac{1}{2}$ years old), bred regularly since eighteen months old; never impregnated. Examinations by Dr. Williams as in previous case, with following findings: Uterus enlarged; twice normal size, soft and flabby; characteristic of endometritis. Right ovary diminished; dimensions, $\frac{1}{2}$ inch in length by $\frac{1}{2}$ inch in breadth; consists of cyst; Graffian follicle

indicated recent oestrus, which owner corroborated. Ovaries much diminished; left ovary $\frac{7}{8}$ of an inch in diameter, containing corpus luteum; neck was protruding (as shown amongst pictures on evening previous), ovaries free. Diagnosis: Probably sterile. Small possibility of breeding. Right ovary precluded; small possibility in left, but not much probability. Oviducts normal.

These cases diagnosed by Prof. Williams, and his wonderful collection of specimens; and the broad experience and careful



Courtesy of Saturday Utica Globe.

Some cases for diagnosis.

study of sterility and its causes, manifested in his lectures, which revealed the fact that they emanated from a master, are of untold value to the profession in general, in setting before them the *true* causes of this more or less common malady amongst our domestic animals, and will do much toward impressing upon the young practitioners the possibilities in this line of work; so that we will have done with the "opening her up" system, or dilatation of the os, when the true cause of non-conception, be it curable or otherwise, may be situated in the ovary, oviduct or uterus. We have pointed this out editorially some months ago, and we are glad to have an authority like Williams demonstrate it so clearly.

CASE 16. *Holstein Cow*, teat tumor; diagnosed by Dr. Frost, and tumor extracted with teat-tumor extractor.

CASE 17. *Bay Mare* (aged). Chronic endometritis. Diagnostician, Dr. Williams. No treatment prescribed.

CASE 18. *Black Gelding*, poll-evil. Animal placed on table and the Williams operation for poll-evil performed by Drs. Hall and Darby, under a general anæsthetic.

CASE 19. *Brown Gelding* (aged), degenerated mole on outside of hock joint. Had first appeared in Dr. Hollingworth's practice about a year and a half ago; had been operated on, but returned in six or eight months; condition at time of presentation to clinic about a year's standing, or more. Specimen of growth submitted to Dr. Ford, pathologist, who pronounced it a "degenerated mole." The horse was cast and after local anæsthesia by cocaine, Drs. Frost and Brocket proceeded to dissect out the growth. In addition to the large gathering of veterinarians at the clinic, there were also present Drs. Johns, Spence and Ford, pathologists; Dr. Bernstein, director and custodian of the state asylum, and Dr. Rogers (chemist), director of Pratt Institute, Brooklyn, N. Y.

So earnest and interested were those in attendance that they only gave themselves a brief recess at mid-day to partake of the excellent buffet luncheon Dr. Hollingworth served at his hospital, and returned to their work; and the general opinion prevailed that the clinic, as well as the meeting in general, was the best in the history of the society; in short, was a real "Hollingworth clinic," and those who were at Utica four years ago know what that implies.*

ACUTE GASTRIC INDIGESTION.†

By I. L. BUCHANAN, D.V.M., Auburn, N. Y.

Case No. 1. The animal was a four-year-old draft horse, weight 1,400; food, soaked corn, bran and oats.

I was called to see this case at 10 a. m. and found the animal in considerable pain, the pulse and breathing rapid, conjunctiva injected, marked tympany of whole abdomen, no peristalsis. I used the trocar in right flank and large quantities of gas escaped. Gave a hypodermic injection of arecoline and strychnine, and two ounces of aromatic spirits of ammonia, and an anti-ferment. Peristalsis was soon established, but more marked on the right side than on the left. Also there was considerable distension of the abdomen on the left side, and I knew the stomach was involved and filled with gas. Later, peristalsis became more marked on this side and the gas could plainly be heard moving along through the intestines. In an hour the animal was quiet. Stimulants were left to be given through the day

* In a communication under date of August 13, Dr. Hollingworth reports all cases operated upon at the clinic "doing well."

† Read before the Central New York Veterinary Medical Association, at Syracuse, June, 1912.

and the case was seen again at two o'clock. Apparently it was doing well and the owner reported it as coming along finely.

I told the owner I would telephone or see the horse again that evening. About seven o'clock I called again. The owner said the horse had been doing well all the afternoon. He led the horse out on the floor to water and I noticed it retched. The animal refused water and soon retched again. There was no tympany noticeable, no pain, and some peristalsis on both sides. We moved the horse about the floor and the more he was moved the more he retched, and soon commenced to paw. I drove to the office for a stomach tube and by the time I returned the retching was a continuous performance. The tube was passed through the nostril and a small amount of gas escaped. All symptoms of trouble disappeared. Salicylic acid in alcohol was given through the tube to stop fermentation and strong ammonia water well diluted was given for a stimulant. The tube was left in place, but no effort made to keep it open.

Soon the horse became uneasy, pawed, and commenced to retch. The tube was opened again and a small quantity of gas escaped, which was followed at intervals by spurts of gas as the tube was cleared or cleared itself. There was the constant formation of an odorless gas and if the tube was permitted to remain clogged for half an hour the pains and retching began again.

No physic had been given in the morning, which was a mistake. About nine o'clock at night three drachms of aloin were given. The ammonia was pushed and two ounces of turpentine given to stop fermentation. The case dragged along hour after hour under just these conditions,—a constant formation of gas and its escape through the tube, and a fair intestinal peristalsis.

About four o'clock in the morning two ounces of creolin in a quart of water was given, and one grain of arecolin hypodermically. An hour later the gas formation had ceased and the tube was withdrawn. The horse made an excellent recovery.

Now there are some questions about this case: What was the gas which formed so persistently? Reeks says the bulk of the stomach gases is carbonic acid and will unite with ammonia to form ammonia carbonate. He also says it is a mistake to give ammoniam carbonate in these cases, because in the presence of acid the carbonate is broken up and gives off carbonic acid, thus increasing the gas in the stomach. If ammoniam carbonate administered will do this, why will not the carbonate formed in the stomach also decompose in the presence of acid?

Undoubtedly, a purgative given in the beginning of the case would have sustained the action of the bowel and eliminated the all-night session with the stomach tube.

Case No. 2. This animal was used for farm work—when he was not laid up with colic. He was subject to colic. Every time he did a day's work, it was colic at night, but never any colic unless he worked. I was called in the forenoon, reaching the case late in the afternoon. The owner telephoned the horse was better and not to come, but I failed to receive the message, as I was already on the way. When I arrived, however, he wished me to look the horse over and give him something.

For two years this horse had been subject to these attacks after working, and had been turned out all summer to outgrow the trouble if possible. They put him at work the day before with the usual results. The horse had been in some pain all the forenoon and had eructated sour-smelling gas and some particles of feed. The sour smell and ingesta were in evidence about the horse's nostrils and in the feed box.

I examined the horse and found the pulse and breathing practically normal, no tympany and no pain, a very slight peristalsis.

This horse was under observation for an hour before any medicine was given, the owner being quite interested in discussing the case. The case was diagnosed as colic, due to embolism, and the owner was informed that the horse was liable to a ruptured stomach at any time under such conditions as were present. He laughed and said the animal had always recovered before and he was not alarmed this time. A purgative was given and an ounce of aromatic spirits of ammonia and a hypodermic of eserine sulphate. Just as I withdrew the needle the animal retched and immediately there was a change in its demeanor. I knew the stomach was ruptured and informed the owner the animal would die. He did not seem to believe me—because the animal had been sick so many times and had never died before. The post-mortem showed a ruptured stomach and an embolism in the posterior aorta anterior to the caelic axis.

LACTATION IN AGED VIRGIN MARE.

By Dr. W. J. RATIGAN, Camden, Ohio.

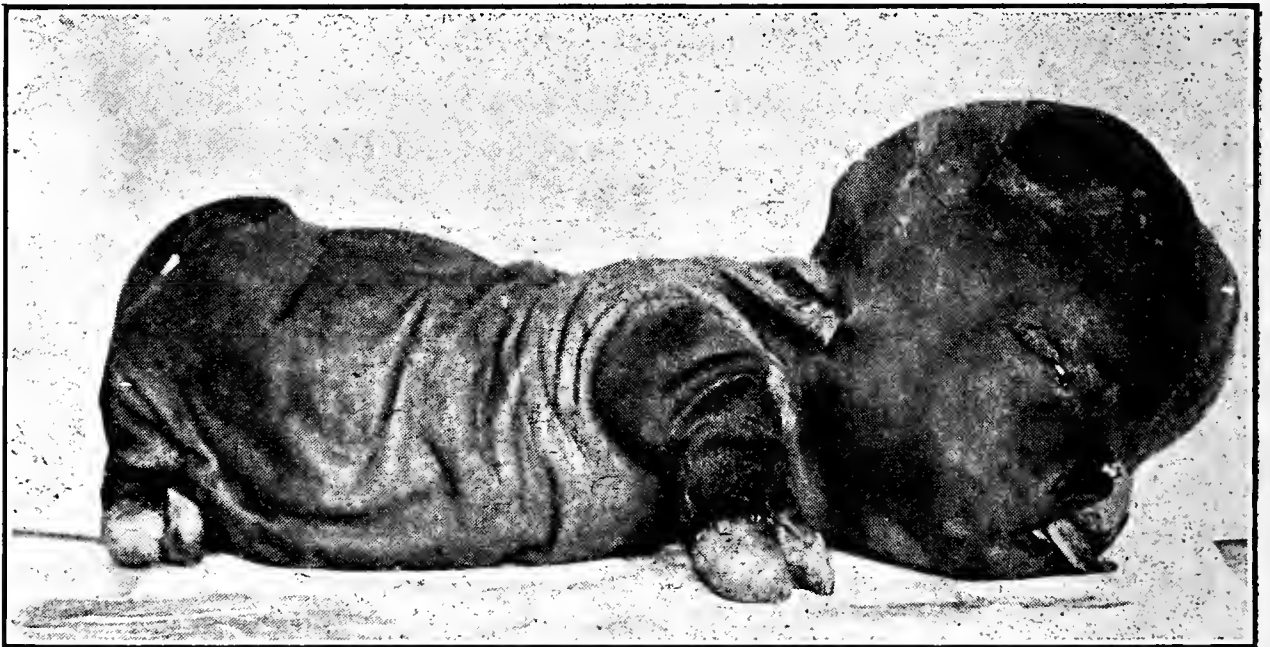
An old man came to my office one morning and stated "he had an old mare suffering from diabetes." I asked him how he knew, and he replied he had read the disease up in a stock book. I questioned the old man closely and became convinced he had a lot of faith in his book. I gave him some medicine, and several

days later was called to his farm, where I went in company with Dr. W. R. Dorsey, of Bellview, Ky. *Signalment*: Brown, general purpose mare, $15\frac{3}{4}$ hands high, twenty years old. *Anamnesis*: Was said to be "wormy" and lazy; for several months had been given a patent worm medicine, but condition didn't improve and she was turned to pasture. *Symptoms*: Much emaciated hind limbs and ventral part of abdomen, very oedematous, udder greatly swollen and painful, causing a straddling gait. Temperature 104.6 (F). Pulse 94, respirations greatly accelerated. Mucous membrane slightly icteric, appetite somewhat capricious. Hard difficulty in milking her due to the smallness of the teats. Owner said she had *never* been to a stallion. This explains, perhaps, the rudimentary development of the teats.

Diagnosis—Mastitis, from retention of milk; the secretion perhaps caused by something injected at pasture which in its circulation had stimulated the lactiferous cells to functionate. There were no abrasions of any sort on the udder.

AN EXTRAORDINARY FREAK OF NATURE.

The accompanying cut was made from a photograph of a calf that was sent to one of our advertisers for preservation, coming from Ashland, Ky., where, we understand, the case came un-



der the care of Veterinarian Fanning, of that place. The history is, that the cow was dehorned while carrying the calf (at what month of pregnancy we have not yet learned), and that a negro held her head while the horns were being cut off; and it is suggested that the likeness to a negro child's head is the result of a maternal impression received by the cow at that time?

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CARCINOMA OF THE SPLEEN IN A DOG—REMOVAL—RECOVERY [*F. W. Cousens, M.R.C.V.S., F.Z.S.*].—A six-year-old small Irish terrier had an internal growth for which he was operated. On opening the abdominal cavity the growth was found entirely filling the cavity, implicating the spleen and necessitating the extirpation of the whole organ. When removed the entire mass weighed a little over 7 pounds. Although 30 or 40 blood vessels had to be ligated, but little blood was lost. There was but little raising of temperature for a few days after the operation. Careful diet was prescribed. Recovery after a month. The growth was found to be carcinoma.—(*Vet. Journ.*)

EXTENSIVE OSTITIS AND PERIOSTITIS OF THE HUMERUS AND SCAPULA IN A DOG [*Prof. George H. Wooldridge, F.R.C.V.S.*].—Large Great Dane bitch, three years old, was very lame on left fore leg and the shoulder was much enlarged. She has been lame since several months and treated with bandage and splints from the foot to the elbow. When the bandage was removed no trace of fracture could be detected. The shoulder, however, was enormously enlarged. The swelling being hard and extending down to some distance. The leg was paralyzed, the shoulder and elbow dropped and the carpus and metacarpus dragged along the ground. Suspicion of sarcoma was suggested. The dog was destroyed. The leg removed showed no abnormal adhesions of the skin or chest wall. The enlargement extended more than half way up the scapula and half way down the humerus. There were some deeply situated spicules of bone, but the growth did not have the appearance of sarcoma. It was simply made of oedematous inflammatory fibrous tissue. The humerus was found the seat of rarefying ostitis and periostitis. There was a large cavity in the upper portion of the bone and the periostitis involved the body and upper extremity of the bone down to its lower extremity. Periostitis existed also on both external and internal face of the bone. Articular surfaces were sound.—(*Vet. Journ.*)

THE BEST POSITION FOR INCISION OF THE ABDOMEN IN OOPHORECTOMY OF THE CAT [*Prof. F. Hobday, F.R.C.V.S.*].—The author changing his opinion as advanced in his work on canine and feline surgery, after performing the operation on some 100 female cats, recommends that the higher flank incision be resorted to, as far the best of any other for the opening of the abdomen. This is based on two reasons: “first, because the cat, being an animal who (after an operation) has the habit of sitting quietly in a huddled-up position, there is less likelihood of adhesion between the fresh wound and either omentum or intestine; and secondly, because in the event of the patient suddenly becoming frightened and jumping a height to the floor, there is less likelihood of protrusion of the intestine.”—(*Ibid.*)

BONY TUMOR OF THE MAXILLA [*J. P. Heyes, F.R.C.V.S.*].—Two-year-old filly has on the outer side of the left lower maxillary bone, opposite the third lower molar, a painful, hard swelling. Simple remedies were first applied and the growth enlarged, interfering with mastication. When the temporary molar was shed, the tumor was readily apparent in the mouth, and it had grown, extended to the margin of the masseter muscle and the lower border of the maxillary ramus. Firing and biniodide blister were resorted to. Actinomycosis being suggested by the presence of small pustules bursting and discharging yellow pus, microscopical examination was made and proved negative, staphylococci being only detected. Finally surgical interference was decided, the animal secured and chloroformed. A large piece of the growth was removed and it was then found that within this bony tumor there was a sharply defined nucleus of more compact material, probably a perverted developed third permanent molar, which rested in a cavity communicating with the mouth through the alveoli of the temporary molar. Three days after this operation a diffuse swelling appeared on the scapular region of the near fore leg with great febrile manifestations; and the next day a similar swelling made its appearance in the left lumbar region. Pus soon made its appearance and microscopically examined showed staphylococci. An autogenous vaccine was prepared and injected hypodermically twice in 24 hours. Soon after the symptoms improved and one week after the injection the mare was entering in convalescence, although it was only after seven weeks that the cavity of the jaw was closed.—(*Vet Record.*)

GENERALIZED MILIARY TUBERCULOSIS [*Henry B. Eve, M.R.C.V.S.*].—At the post-mortem of this valuable maiden bull bitch, aged two years and six months, which was destroyed after a comparatively short sickness, the liver, lungs, kidneys, lymphatic glands were found all extensively diseased. The spleen was only slightly affected at its apex. Bought for breeding purposes, this bitch was kept in the house and caught cold, which was treated as a case of influenza. After a stay in the country for a while, she showed dry husky cough, followed later by excessive expectoration. Rapid emaciation took place, intermittent diarrhoea tinged with blood. Elevated temperature, specially at night. Purulent discharge of the eyes. Rales were heard on auscultation of the chest. Pulse accelerated. Breathing hurried, with occasional hemoptisy. Tuberculin test gave typical reaction. A treatment with medicinal doses of tuberculin and open air, adrenaline, quinine, tonics, etc., with raw meat and fish, milk, eggs, etc.—gave but a temporary relief, and the animal one day was taken with such a violent fit of coughing, followed by hemorrhage and delirium, that the animal was chloroformed to death.—(*Vet. Record.*)

USEFUL DISINFECTING SPRAY [*Oscar Stinson, M.R.C.V.S.*].—A simple mode of throwing spray, so as to irrigate the interior of the facial sinuses after trephining, is by using a sprayer analogous to that used for horticultural purposes, viz.: a large tin can which is carried on the back of a man and held by straps passing on the shoulders. The tube which the can carried at its bottom has a rubber prolongation which is introduced in the trephined openings and the force and current of the liquid injected is regulated much more easily than the common hose-pipe which is frequently used. The application of this instrument, in addition to being extremely simple, is effective and expeditious, and is possessed of advantages not always obtainable when the apparatus is either complicated or cumbersome.—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

RETAINED PLACENTA CAUSES INFECTIOUS METRITIS—INTRAVENOUS INJECTIONS OF COLLARGOL—RECOVERY [*A. Chalo-pin*].—A cow had calved six or eight days previous, but had only delivered part of her placenta and she refused her food. The

symptoms present nothing alarming at first and the case is considered and treated as one of simple metritis. The treatment of permanganate injections and of salol and naphthol internally did not seem to be followed by good results and three days later the animal is in serious condition. One of the knees has become swollen and the infection is soon manifested by general symptoms. All the legs are affected, the large articulations are all disabled, pneumonia sets in. In fact, death at short notice is considered as unavoidable. It is in the presence of this condition that the writer resorted to the intra-venous injections of collargol. A first solution, made of 50 centigrams of collargol in 10 cubic centimeters of boiled water was injected and followed by superior results. The animal showing great improvement a few hours after. For three days in succession 20 centigrams of collargol were injected and in five days there remained only the pneumonia which was relieved readily a few days after.—(*La Semaine Veter.*)

FACIAL SPASM IN THE HORSE [*Professor Douville*].—Brown gelding, six years old, presented curious troubles of the physiognomy. The lips, eyelids and ears are periodically the seat of convulsive movements. First the lips have slight tremblings which gradually increase in number and severity. The eyelids also. They began on the ciliary angles and soon involve the orbicularis. After a few seconds the lids open and close so frequently, rapidly and repeatedly that the globe is almost closed. There is true clonic blepharospasm which lasts for a few minutes, when gradually all passes off. The contractions of the ear are less marked and principally noticed when the access is fully developed. Pressure over the various regions affected have no effect. The accesses are intermittent and last about five minutes. If the animal is kept quiet in a dark stall he shows nothing, but if the door is suddenly opened or if light is thrown on the box or if the horse gets frightened the symptoms appear. The troubles occur only in the regions where the branches of the facial nerve are distributed. No treatment was prescribed as it was an animal recently bought and his condition obliged the dealer to take it back.—(*Bullet. de la Soc. Cent.*)

CURIOUS INTRATHORACIC TRAUMATISM IN A COW—[*Mr. Bonnigal*].—Cow refuses eating since two days—no rumination takes place—the animal moans, is stiff and dull. Temperature 39.6-10. Percussion on the left side of the chest is painful. Respiration accelerated. A hard reducible swelling appears after

two days between two ribs. Detected as the cardiac region is auscultated, it is found harder in the center and about the size of the fist. An incision quite deep is made and in the intercostal muscular tissue is felt the extremity of a metallic wire. Taken hold of, about 15 centimeters of it are pulled out when resistance requires the use of a blacksmith's nippers to secure it, and finally a parasol rib, 52 centimeters long is pulled out, holding at one end a ball of alimentary substance from the rumen as big as a large nut. The animal died the next day. The postmortem revealed ordinary traumatis lesions of similar cases.—(*Prof. Veter.*)

HEMATOMA AND PARALYSIS OF THE PENIS IN A HORSE—AMPUTATION—RECOVERY [*Mr. Cubret, Army Veterin.*]—*Bourdigal*, ten years old, officer's horse, is reformed for eye trouble and is now broken to harness. One day he gives a violent kick with both hind legs and then shows suddenly a gradual enlargement of the penis. Indeed soon this organ is enormous, hangs from the sheath about 40 centimeters and measures the same size in circumference. Its free extremity is turned backwards. Urination takes place normally in a stream turned backwards between the hind legs. Hematoma of the penis is diagnosed. Scarifications with the zoo-cautery gives escape to abundant sero-bloody liquid. The swelling gradually diminishes, but the paralysis of the penis remains. Gangrene is threatening. Amputation was performed by dissection of the urethra, its suture to the skin and section of the cavernous body. No special after treatment. Recovery uneventful.—(*Rev. Veterinain.*)

EXTRAORDINARY RECOVERY [*Mr. Dutems*].—Low-bred old mare had had already six gestations, this last looks rather serious. Her foal is in transversal position, costal presentation, with the hind legs pushed back and head and fore legs beyond reach. Only one elbow can be felt. The abdomen of the mare is dropping, the efforts are going since four hours and the animal is much exhausted. Both fore legs are with difficulty finally amputated and the head and neck severed near the trunk, when finally the remains of the foal were extracted. After removal of the membranes free washing of the uterus was prescribed with 25 quarts of boiled water slightly antiseptic with permanganate. The next day palpation of the abdomen indicates that most of the irrigation has dropped in the abdomen through a transversal laceration of the uterus. The animal is considered as doomed. The owner

will not allow her to be destroyed. Twenty-four hours later the mare drinks and eats well. Her general condition is good and finally recovery follows.—(*Journ. of Zootechny.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

PRIMITIVE PULMONARY SARCOMA IN A CAT [*G. Roncaglio*].—Age seven years old, the animal began to lose flesh and became dull. Soon his breathing became oppressed, then dyspneic with the slightest exertion. General condition is bad. Abdomen tense, mucous membranes anemic and conjunctiva has a subicteric coloration. Thorax is arched, intercostal motions limited, palpation not painful. The respiratory movement is almost entirely gone, except in some points where it is stronger and harsh. A very marked dullness is detected with plessimetry. Cardiac area is defined with difficulty. Peripheric lymphatic glands are normal. A positive diagnosis could not be made as the owner objected to further applications of means of obtaining it, such as tuberculation, serodiagnostic, etc. The animal was killed. At the postmortem the pleura and heart were found perfectly normal. The lung is much enlarged, hard, almost fibrous but yet elastic. It presents white-yellowish zones resembling the white substance of the brain. Under the visceral pleura there remains a few small spots of normal pulmonary tissue. The bronchial and mediastinal glands are also involved in the same lesions. The histological examination revealed its nature.—(*La Clinica Veter.*)

SURGERY OF THE LUNGS [*A. Gaule*].—A young dog had a penetrating wound of the chest with prolapsus of the lung. The wound was made with a butcher knife, and is situated on the left side, about the middle third of the chest. It runs horizontally and extends through the ninth and tenth ribs and the eighth, ninth and tenth intercostal spaces. The piece of lung which protrudes is as big as a small apple. It is bloodless and carries a quite deep longitudinal wound. The respiration of the dog is hard, slow and superficial. The femoral pulse is normal. After cleaning and disinfecting, a solid silk ligature is applied on the base of the prolapsed mass, as deep as possible, so as to isolate it from the sound lung. An incision is made above the ligature and the stump pushed back in the chest. The cutaneous wound and the suture of the muscles being done, a dressing was laid

over. Caffeine injections were given for a few days. Milk diet. Slight fever on the third day is allayed with calomel. The second day only the breathing was a little disturbed. Dressing changed on the eighth day. Recovery in two weeks.—(*Il Mod. Zooiatzo and R. Generale.*)

TINCTURE OF IODINE IN CONTAGIOUS VAGINITIS [*Dr. Pagliardini*].—Desirous to experiment various modes of treatment, the writer having a number of cows with the disease breaking out among them, divides them in four lots. Each lot is treated with vaginal bougies made of iodol (10 p. 100) and protargol (2 p. 100), which are introduced every two or three days after a cleaning made with different antiseptic solutions. The irrigations are made with 10 per cent. of salted sterilized water in one lot of cows; in another with lusoform solution at 2 or 3 per cent., and in a third with a weak solution of sulphate of copper. For the fourth lot, the irrigations are replaced by tincture of iodine applied with a brush with flexible metallic handle, so as to reach the bottom of the vagina.

This last mode of treatment, compared with the others, has given excellent results. The author does not use bougies now, but every four or five days applies tincture of iodine. One hundred and fifty cows treated in this way recovered much quicker than all the others treated differently. Of easy application, the new treatment recommends itself by its low cost.—(*Il. Mod. Zooiat. and R. G.*)

ACKNOWLEDGMENT.—Circular 199—B. A. C.—The Score-Card System of Dairy Inspection, by George M. Whitaker; Circular 200, B. A. I., A Simple Butter Color Standard, by S. Henry Ayers; Bulletin of State Agricultural College, Colo. Div. of Vet. Med.; North American Journal of Homœopathy (August); Report Ontario Veterinary College (1911); Report New York State Veterinary College (1910-11); Philippine Agricultural Review (May and June, 1912); Agricultural Journal of So. Africa (June, 1912); Catalogue 1912-13, Indiana Veterinary College; Farmers' Bulletin 498, U. S. Dept. of Agr.; Methods of Exterminating the Texas Fever Tick, by H. W. Graybill, D.V.M.; Quarterly Record, No. Dak. Agr. Coll., Catalogue of Course of Veterinary Medicine and Surgery; Bulletin 199, Treatment of Bovine Tuberculosis, N. S. Mayo, Va. Polytechnic Institute; The "Braxy" Type of Sheep Disease in Australia, by J. A. Gilruth, Melbourne University.

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TEXT BOOK OF VETERINARY MEDICINE.

TEXT BOOK OF VETERINARY MEDICINE, by James Law, F.R.C.V.S.; Director of the New York State Veterinary College—Emeritus. Third edition enlarged and revised to date. Fourth volume just from the press; the three earlier volumes revised and published since 1910. Volume five under revision at present time. Four completed revised volumes number more than 2,500 pages. Ithaca, N. Y. The Author.

This stupendous work of Prof. Law's is a masterpiece in veterinary literature. The rapid advances in veterinary medicine in the last few years has made the task of revising a work of this kind more exacting than ever before, but Professor Law, with the tenacity of purpose, determination and faithful devotion to the cause of veterinary medicine that have characterized his life-work, has been equal to the occasion. In almost every chapter the modern doctrines and therapy have been availed of for the benefit of the student of veterinary medicine. In volume I. (the whole of which has been revised), the text on diseases of the blood, serums, toxicity, globulacidal, agglutinating and precipitating actions are new, with the different tests suggested, bringing the work right up to the light of present-day knowledge.

In Volume II., besides improvements in the general text, the subjects of metabolism, auto-intoxication, internal secretions, etc., open up what is essentially a new field. Dealing as it does with diseases of the digestive organs, liver, pancreas and spleen, Volume II. is particularly interesting to the general practitioner.

Volume III., which deals with diseases of the nervous system, genito-urinary organs, eye, skin and constitutional diseases, has not required so general a revision as the two previous ones, but has nevertheless been brought strictly up-to-date in the diagnosis and treatment of diseases of this important group of organs.

Volume IV., which treats of infectious diseases, sanitary science and police, microbes, microbial pathogenic products, defensive systemic products, immunization methods, serum therapy, specific infections, prevention and management, has been virtually made over, to adapt it to the newer knowledge and doctrines. The whole great subject of microbes and their products, in their relation to disease, therapeutics, immunization, etc., has been presented in a general system by which the earnest student can bring

up his knowledge to date, and deal with sanitary problems in a manner which was not available for the practitioner five or ten years ago. Space does not permit of a review of this most excellent literary production, that can in any way nearly approach what it merits, any more than the reviewer can possibly do justice to the work of so great a veterinarian, teacher and writer, as is its author; but we believe that our judgment will not be questioned when we say that *Law's Text Book of Veterinary Medicine* is one of the most complete and comprehensive works on modern veterinary medicine that has ever been published in this or any other country. Aside from the author's immense fund of information, he is a born teacher; and the same pleasant, yet forceful and convincing manner with which he imparts his knowledge in the class-room, is felt throughout the several chapters of his text-book. Printed on good paper, in clean, clear type, each volume is bound in red with gold lettering; the five volumes make a handsome and impressive set of books that should grace the library of every veterinarian, and will prove of inestimable value to physicians interested in comparative medicine.

SURGICAL AND OBSTETRICAL OPERATIONS.

SURGICAL AND OBSTETRICAL OPERATIONS, by W. L. Williams, Professor of Surgery and Obstetrics in the New York State Veterinary College, Cornell University. Embodying portions of the Operationskursus of Dr. Pfeiffer, Professor of Veterinary Science in the University of Giessen. Third edition, revised and enlarged; 240 pages, with 73 illustrations: 1912. Ithaca, N. Y., Carpenter and Company.

This work, which has resulted as a gradual evolution from the booklet published by Professors W. Pfeiffer and W. L. Williams in 1900, entitled "A Course in Surgical Operations," has attained a degree of perfection that it would be difficult to excel in a work of that kind. The cuts illustrating parts to be operated upon, the operative procedures, and the instruments employed, are clear and concise; printed upon excellent paper, each cut usually occupying a page, where it is set in the center, with a clear white background—the description of the plate being set in the same manner on a page opposite to the illustration; making the study of the illustrations easy and pleasant, and their meaning easy of comprehension; essentials in a work on surgery. The text is expressed in that clear, comprehensive manner devoid of all superfluous terms, which characterizes all of Professor Williams' works, or lectures, so well known to the veterinary profession. Part I. contains four divisions grouped as follows: I., operations

on the head, of which twelve are described; II., operations on the neck, of which ten are described; III., operations on the trunk and on the genital organs, of which fourteen are described; IV., operations on the extremities, of which fourteen are described; an aggregate of fifty operations, the technic of which is carefully described and illustrated. Part 2 embraces embryotomy operations, of which nine are described and illustrated. The previous editions of Williams' works on surgery and obstetrics have been good, but this third edition of *Surgical and Obstetrical Operations* brings veterinary surgery right up to the hour with the most thorough, scientific and practical methods of procedure, including the latest instruments especially devised to meet the requirements of the operator. So that while this concise and comprehensive little work is eminently fitted to the uses of the veterinary student, it is equally essential to the practitioner who would keep abreast of the times in veterinary surgery.

WELL-KNOWN NEW YORK VETERINARIAN DIES.—We were grieved to read in a recent issue of the *Rider and Driver* of the death of an esteemed friend, one of the oldest veterinary practitioners in New York City, Dr. James Shaw Cattanach, who had passed to his last resting place on July 7, at his home at Lake Ronkonkoma, Long Island, after an illness lasting eight days. Born in Scotland, Dr. Cattanach came to America forty-odd years ago and has practiced his profession in New York City since that time. He was veterinarian to the first horse show held at Madison Square Garden in 1885. Dr. Cattanach was a good horseman, and was fond of driving a "good pair." Nearly every fall when his friends would meet him after not having seen him for a month or two, and would remark upon his ruddy complexion and hale condition, he would reply that he had "been away on the heather," for he went abroad nearly every year. Three sons have followed their father's choice in selecting an avocation, Charles C., John J. and James S., Jr., all of whom are successful veterinarians.

MUST READ REVIEW TO KEEP IN THE FRONT RANKS.—Dr. W. C. Holden, Delphos, Ohio, in renewing his subscription, writes: "No veterinary practitioner can keep pace with the revolutions of the great wheel of veterinary progress and not be a reader of the AMERICAN VETERINARY REVIEW."

CORRESPONDENCE.

PERTH, WEST AUSTRALIA, June 29, 1912.

Editors AMERICAN VETERINARY REVIEW, NEW YORK: In a recent number of the AMERICAN VETERINARY REVIEW I noticed that one writer referred to the continued infection of a herd, and remarked that there appeared to be a "Typhoid Mary" amongst the herd which he was unable to locate by means of the tuberculin test. The history of a little "Typhoid Mary" of mine may prove of interest. She was an old brown Jersey cow belonging to a milkman in the Metropolitan area, whose herd I tested with P. D. & Co.'s tuberculin in February, 1911. Following inoculation the temperatures were taken on the 12th, 15th and 18th hours, when 50 per cent. of the herd reacted, but the old brown cow was not amongst them. At this time she showed no clinical evidence of disease, and was in fair order for a milking cow. In November, 1911, I again inspected the herd, and examined all the udders manually. Old "Brownie" showed a small fibrous thickening extending up from a supernumary teat at the back of the udder, and she was again tested, together with an old cow that had previously reacted, and another unthrifty brute. The latter gave a marked reaction and was subsequently slaughtered, but neither of the two former showed any appreciable rise in their temperatures, which were taken at the same periods as before. The following April I went through the herd. Once more I found old "Brownie" with a typical induration of one hind quarter of the udder, accompanied by enlargement of the supra-mammary lymphatics. She was immediately condemned and on slaughter proved to be extensively infected with tuberculosis, practically all the glands, even down to the popliteal, being diseased, while the pleura was covered with "grapes," and one horn of the uterus, with its accompanying ovary, was also involved. Although the disease was widely distributed throughout her body, I have seen cattle in a worse state give a pronounced reaction to tuberculin. As an illustration I append the temperature record of the worst case I ever post-mortemed: Pre-inoculation, 101; 12th, 105.4; 15th, 104.4; 18th, 103—hour temperatures. At the time I laid violent hands on her, old "Brownie" was looking

well, with bright eye, clean coat and unabated appetite. A section of her udder was mounted at the Board of Health laboratory and proved to be undoubtedly tubercular. I dedicate her memory to those pig-headed members of the medical profession who persistently oppose the pasteurization of milk for children. In contrast to old "Brownie" may be mentioned two valuable short-horn heifers that reacted to the tuberculin test. Their cases are mentioned to show the impossibility of arriving at, during life, any correct idea as to what cows it is safe to leave in a herd and which are likely to be dangerous. No. 1 was a red heifer in good condition. The post mortem showed three bronchial glands affected, a tiny spot in one mesenteric, and a small patch in the left lung. The small patch, however, proved to be discharging a liberal supply of tubercular pus into one of the bronchial tubes, with the result that this heifer was actively spreading the disease. No. 2 was a lovely white heifer, which it seemed a sin to kill. She proved to be absolutely clean, so far as macroscopic lesions were concerned, until I reached her supra-mammary glands, which showed a few small caseous areas. Sections prepared by the government pathologist showed typical giant cells and were pronounced tubercular. Here we have two apparently healthy heifers in the pink of condition—one actively spreading the disease, and another apparently about to start a primary lesion in the udder.

E. A. WESTON, B.V.Sc.

ADDRESSES FOR PERSONAL COMMUNICATIONS.—Owing to the fact that a large number of REVIEW readers throughout the country have addressed communications to Drs. Mangan and Duncan, since the publication of their papers on "Autotherapy" in the July and August numbers of the REVIEW, respectively, to obviate further matter coming to this office we give below the addresses of Dr. Charles H. Duncan (physician), No. 233 Lexington avenue, and Dr. D. J. Mangan (veterinarian), No. 2557 Third avenue, New York, N. Y.

THE AMERICAN ASSOCIATION OF STATE AND PROVINCIAL VETERINARIANS has an able and forceful leader in its president, Dr. James I. Gibson, Des Moines, Iowa. Uniform live stock health certificates (the creation of which is one of its objects), has been a subject, the importance of which has forcefully impressed Dr. Gibson for some time, and we foretell the accomplishment of that and all the other important objects of the organization, in observing the personnel of the officers.

OBITUARY.

FOSTER ANDREW WAGNER, V.M.D.

Dr. Foster Andrew Wagner died at his home in West Philadelphia, August 6, 1912, in the thirty-first year of his age, following a long illness, the doctor having contracted leucemia while filling the position of government veterinary inspector. Dr. Wagner was born in Hazelton, Pa., February 4, 1882, and received his early education in the public schools of that place. He was graduated from the University of Pennsylvania in 1907, after a three years' course of studies in the school of veterinary medicine, receiving the degree of Doctor of Veterinary Medicine. After graduation he began practice at Windber, Pa., but in 1909 accepted a position as meat inspector for the United States Government, and was stationed at Cleveland, Ohio, where ill health first overtook him. Later he was transferred to Philadelphia, where he remained until the time of his death. He is survived by a wife and three-year-old son. The many kind traits in his character, and his ability in his calling, had made for him many friends, who sincerely mourn his loss.

ROBERTSON MUIR, M.R.C.V.S.

With profoundest sorrow and regret we announce the death on August 6, 1912, of our co-worker and friend, Dr. Robertson Muir, who was one of the faculty of the Grand Rapids Veterinary College.

Dr. Muir was born July 26, 1852, at Glasgow, Scotland. He received his veterinary medical education at Royal Dick College, Edinburgh, Scotland, and received the degree of M.R.C.V.S., April 17, 1875. He practiced in Scotland and Ireland for ten years and in 1885 came to the United States, locating in Union City and later removing to Jackson, Michigan. Later he went to Bowling Green, Ky., where he was made State Veterinarian. He then moved to Grand Rapids, Michigan, where he practiced for seventeen years. He was a member of the Michigan State Veterinary Medical Association and the American Veterinary Medical Association.

He was well liked by all who knew him—honest and kind hearted.

GRAND RAPIDS VETERINARY COLLEGE.

SOCIETY MEETINGS.

ALABAMA VETERINARY MEDICAL ASSOCIATION.

The fifth annual meeting of the above association met in the College of Veterinary Medicine of the Alabama Polytechnic Institute at Auburn, Ala., on the morning of August 2, 1912. A full attendance was present. After routine business the following program was carried out: Dr. O. W. Payne, of Birmingham, read a paper on "Some of His Findings at the Birmingham Slaughter House." He had several specimens of parasites and pathological specimens which he discussed and exhibited to the association. Following this paper a number of members took part in discussing it.

Autogenous Bacterins for the treatment of fistulous withers was next discussed by Dr. I. S. McAdory, of Auburn. He reported the use of these bacterins in several cases. The paper was fully discussed by Drs. Jago, Nixon, Browning, Jackson and Cary.

"Pericarditis As a Complication of Influenza" was the next paper by Dr. G. W. Browning, of Montgomery. He stated that he lost fully 99 per cent. of the cases and that there was no sure cure of this complication, in fact he reported most of them as fatal.

Dr. O. R. Eatman, of Gadsden, Ala., reported five cases of the eversion of the vagina. He stated that most of these cases were due to the formation of old cicatrices coming from injuries of previous time of delivery. His method of treatment was that of using the bistoury at several places around the os uteri. In other words, he did not cut the os all at one place but at several places and then dilated it with his fingers and hands and made a delivery.

Dr. M. F. Jackson reported the results of his treatment of fractures of long bones and exhibited a special splint that he devised especially to apply to fractures below and above the hock joint and about the fetlock. In his treatment of cases for the Tennessee Coal & Iron Company he reported good success.

The following resolution was unanimously adopted by the Alabama veterinarians: Resolved, That it is for the best interest of the public and for the association that all municipal meat and

milk inspection in Alabama shall be done by graduate veterinarians.

The following officers were elected for the ensuing year: Dr. W. D. Staples, Anniston, Ala., president; Dr. O. R. Eatman, Gadsden, Ala., vice-president; Dr. C. A. Cary, Auburn, Ala., secretary-treasurer.

The Georgia veterinarians were called to order by Dr. Jago, of Athens, Ga., and Dr. Burson, of Athens, was elected secretary pro tem. Dr. Jago, the president, gave his regular address, in which he advised all the veterinarians to be true to the association and active members.

Dr. Burson then read a paper on "Sporadic or Mycotic Stomatitis in Cattle." He told how to differentiate it from contagious foot and mouth disease. This paper was fully discussed by both the Georgia and Alabama veterinarians.

Dr. P. W. Hudson, of Americus, Ga., reported his method of treating cases of bursatti. He removed all infected tissues with a knife and then applied chloroform linament regularly. In the discussion some veterinarian advised the use of iodoform one part and ether six parts with daily application.

Dr. Burson next gave a talk on the method employed in making hog cholera serum at the state plant at Athens, Ga. Many questions were asked about the technique of this process.

Dr. Jago next gave a talk on the treatment of ordinary colics. As usual this subject brought out an extreme and lively discussion on the part of all veterinarians present.

The Georgia veterinarians took in five new members and the Alabama association admitted seven new members. Following this the association adjourned and a polyclinic was held at the operating pavilion of the College of Veterinary Medicine. There were twenty-five cases present at the clinic.

Dr. C. R. Jolly trephined a case where pus was found in the turbinated bones. Dr. J. A. Prickett diagnosed and operated on a case of puncture of the foot at the toe where the pus had penetrated to the coronet. Dr. R. B. Nixon gave a demonstration of castration.

Dr. T. L. Wright, Moultrie, Ga., one castration.

Dr. B. S. Clay, Fitzgerald, Ga., one castration.

Dr. W. D. Staples, of Anniston, Ala., made a diagnosis and gave treatment for a case of sesamoiditis. Dr. Jago, of Athens, Ga., made a diagnosis of a case of lameness in the foot. The location of the lameness was questioned, and the animal was cocained, proving that Dr. Jago was correct.

One fibroid tumor on the elbow of a mule was removed by Dr. C. A. Cary after the animal was placed on Conkeys Simplicity operating table. A melanotic tumor was removed from the croup of a gray horse, the horse remaining in a standing position confined by hobble and twitch by Dr. Cary. Another case of fibroid tumor was removed from the abdomen of a mule by Dr. Cary.

In nearly all cases a diagnosis was made by at least three veterinarians and their opinions given before any operation or decision was made upon the line of treatment.

Several other cases of lameness, some obscure and difficult to diagnose, were present at the clinic. In fact, the clinic started at 10 o'clock in the morning and was continued until about five in the evening. It was considered by all one of the most interesting things in connection with the Georgia-Alabama veterinary meeting.

Just as the clinic was closing a case of flatulent colic in a mule came in. This case was successfully treated by Dr. R. B. Nixon. He first gave her orum a dose of chloral, then tapped the colon; then gave arecoline.

C. A. CARY, Secretary-Treasurer.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

The nineteenth annual meeting of this association was held at the Board of Trade Rooms, Reading, Pa., June 19, 1912. The meeting was called to order by Dr. Geo. R. Fetherolf, the president being absent.

The minutes of the previous sessions were read and approved. The attendance was good, most of the members longing for a day away from home and constant work.

After the regular routine business, the following propositions for membership were received, namely: Drs. H. De Turk, Birdsboro, and J. O. Feustermacher, New Tripoli. These men were later duly elected as members of the association.

The various members of the Committee on Meat and Milk Inspection reported briefly. The subject of "Inspection Work" was thoroughly discussed.

Election of officers:

President—G. R. Fetherolf.

Vice-President—M. D. De Turk.

Treasurer—U. S. G. Bieber.

Secretary—W. G. Huyett.

Only one secretary being made, Dr. Huyett, the incumbent, generally performing the work of both offices in the past, now acting as corresponding and recording secretary.

Trustees—O. G. Noack, D. R. Kohler, J. O. Feustermacher.

There being no opposition to any of the nominees the secretary was instructed to cast the ballot, and they were declared elected.

Under new business, Dr. Dunkelberger reported a man who, in his estimation, was practicing veterinary medicine illegally. It was moved and carried that the man's case be thoroughly investigated and reported to the secretary by the complainant and the secretary instruct the secretary of the Examining Board thereupon.

A paper on "Pin Worms and Eczema" was read by Dr. Dunkelberger, this having been a recent case, and the peculiarity of the case was interesting reading.

Dr. Noack's paper upon "Some Effective Methods of Controlling Tuberculosis in Cattle" was well received. He referred to the Bang and Ostertag methods followed in various countries, Denmark being the first country to endeavor to control the disease with the Bang system, and succeeded fairly well, as that country is one of the most prosperous to-day—dairying being their chief industry. The Ostertag method, used in Germany and some other countries, by only removing advanced cases from a herd as they appear, does not prove effectual, as we can never eliminate and detect all the cases of a herd.

In the United States these various methods have also been tried. Massachusetts had for some time pursued the method inaugurated by Belgium in killing all reactors, until they were obliged to end with the slaughtering for want of funds to pay all such reactors, and the ravages of the disease would go on as before.

It was suggested that all reactors in a state, for instance, as they appear should be secured by the state and placed at various state institutions, which are receiving annual appropriations, and these cattle held under the Bang system, having them all strictly isolated from all other cattle, attendants and all pasteurizing the milk thus obtaining products in this manner, and these animals may safely be also bred.

These various methods were further discussed, with the conclusion that no satisfactory method had yet been attained in

eradicating successfully this great white plague; either methods propounded having advantages and disadvantages, though the Bang system sustains most supporters.

Dr. De Turk brought up the matter, whether no steps could be taken by this society to protect local veterinarians in applying the tuberculin test to shipped cattle by being encroached upon, the dealer usually employing the veterinarian that does the job at the lowest price and who is often underbidding the nearest qualified veterinarian to obtain the job. After some discussion a motion was made and seconded that the secretary draw up resolutions relative to this cause and present a copy to the State Veterinarian for his deliberation, as follows:

Whereas, It has been found that local veterinarians sometimes are compelled on account of competition to test inter-state cattle under unsuitable conditions to please the dealer; therefore,

Be it resolved by this association, That the State Veterinarian divide the state into districts and that only the tests of the veterinarians appointed in these districts are recognized by the State Live Stock Sanitary Board. A motion was made to adjourn.

W. G. HUYETT, Secretary.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The fifteenth semi-annual meeting of this association was called to order in the "Ordinary" of the West Hotel, Minneapolis, at 10 o'clock a. m., Wednesday, July 10, by the secretary, word having been received that the president would be unable to attend.

Dr. B. Portor, of Albert Lea, was elected to fill the vacancy and presided over the sessions. The regular routine took up the time until twelve noon, when the meeting adjourned to meet at the Parke, Davis headquarters, First avenue North, Minneapolis, where the members sat down to a bountiful spread in the way of a Dutch lunch; and I want to say right here that I have been entertained at Dutch luncheons before, but never in the history of my experiences with these spreads has the society been so generously entertained at one of this kind as they were at this meeting by the managers of the Parke, Davis Company, and particularly the service given us by the young ladies of the company. The only thing that could have been added to make this

luncheon any more desirable perhaps, to some of the members who had partaken of this kind of a luncheon before, was the fact that the Dutch was omitted.

A three o'clock the party took cars at the West Hotel entrance for Excelsior Springs, where boats were in waiting for a ride on Lake Minnetonka; after three hours ride around the lakes, which could not have been more pleasant had it been ordered on purpose, the party landed at the head of the lake at Spring Park, where a banquet was served at the Hotel De Lotero.

Dr. Joseph Hughes, of Chicago, was the honored guest at this meeting. The party returned after the banquet to the city by the Great Northern, bringing the first day's session to a close.

On July 11th, at 10 a. m., session was called to order by Dr. B. Portor, time being limited, the regular routine of business was suspended, and the reading of papers was taken up.

Dr. Geo. Rennicks read an interesting paper on "State Practice Act." Dr. C. L. Seger read a paper on "Caesarian Operation (sow)." Dr. Francis Howard Punchard, A.M., M.D., P. H. D., New York City, read a very interesting and elaborate paper on "Phylacogens in Veterinary Practice," which was highly appreciated by members present.

Dr. C. Easton, St. Paul, secretary of the State Tuberculosis Association, gave a very interesting talk on "Tuberculosis and Legislation."

Dr. Hubert H. Fisher, Pittsburg, Pa., followed with a paper on "A General Survey of Biological Products," which was a very instructive paper.

Dr. Hughes was called upon and gave a very interesting talk on general subjects. About fifty members were present, and seven new names were added to the membership roll; the morning session adjourned at 1:30, and after luncheon the members were taken about the city of Minneapolis in automobiles out to the beautiful Minnehaha Falls and back to the West Hotel, after which the members all said good-bye once more and departed for their homes; all present agreeing that we had just enjoyed one of the most instructive and entertaining summer meetings that had ever been held in this state, and great credit is due along with a vote of thanks to the local committee having the entertainment in charge and those on the program who so generously gave of their time and knowledge to help to make this meeting a success.

G. ED. LEECH, Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this association was held at the West End Hotel, Portland, July 10, 1912. Those answering roll call were: Drs. A. Joly, I. L. Salley, G. F. Wescott, C. H. McGillicuddy, H. L. Stevens, E. E. Russell, C. W. Watson, W. H. Lynch. The minutes of the previous meeting were read and approved.

A very interesting paper was read by Dr. W. H. Lynch; subject, "Epictetus, Ethics and Esthetics." Dr. Blakely, who was unable to be present on account of other engagements, sent a very able paper, which was read by the secretary. Subject was, "Ventral Hernia" in an eight-year-old mare, which was hooked by a cow in the groin on the median line, very close to the mammary gland, some two feet of the intestines protruding from the opening. This case responded to the doctor's treatment and made a successful recovery. This paper was followed by a long discussion by nearly all the members, each relating cases. Some had met with the same success as Dr. Blakely had; other cases that had received practically the same line of treatment were failures. This subject of ventral hernia also started a discussion on inguinal and umbilical hernia.

New Business.—A Legislative Committee was appointed by the president to wait upon the Governor at our next Legislature, the two chosen being Dr. C. L. Blakely, of Augusta, and Dr. A. L. Murch, of Bangor.

Motion was made by Dr. H. L. Stevens that a vote of thanks be extended to those furnishing subjects for this clinic.

Next meeting to be held at Skowhegan, October, 1912. Papers to be read by Drs. Cleaves, Jerns, Jackson and Wescott.

Meeting adjourned at 11 p. m.

A two-days' clinic was held at Dr. Wescott's Hospital, July 10 and 11; a number of surgical operations were performed on horses, dogs, pigs and fowl by the different members of the organization. The president, Dr. G. F. Wescott, extended an invitation to Dr. W. H. Simpson, of Malden, Mass., to be present at this clinic, which was accepted. Dr. Simpson was the chief operating surgeon on the second day, performing some of the most difficult operations of major surgery known upon the equine.

There were three new graduates before the board of veterinary examiners. Charles L. Ryan, Henry B. Wescott and Norman J. Brown. They also made application for membership to the Maine Veterinary Medical Association.

C. W. WATSON, Secretary.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The twenty-third annual meeting of this society was held at Utica, N. Y., July 30 to August 1, 1912. About 80 members and visitors were present.

The meeting was called to order at 10 a. m., July 30, by the president, Dr. J. F. DeVine. The address of welcome was given by the Hon. J. H. Baker, mayor of Utica. This was responded to by Dr. V. A. Moore. The remainder of the morning was given to the routine business of the society and reports of various committees.

The afternoon was devoted to the address of the president and the following literary program: "My Experience of Twenty Years as Milk and Meat Inspector of Rome," Dr. Wilson Huff; "A Peculiar Case," Dr. W. B. Switzer; "The Use of Arecolene in Acute Pleurisy and Some Other Troubles," Dr. D. D. LeFevre.

In the evening Dr. V. A. Moore discussed the "Proposed Amendment to the Agricultural Law Relative to Tuberculosis."

SECOND DAY.

The program was continued as follows: "Two Rare and Interesting Cases," Dr. R. M. Weightman; "Complement Fixation in the Diagnosis of Glanders and Infectious Abortion," Drs. V. A. Moore and C. P. Fitch; "Investigations Concerning the Nature and Etiology of Swine Plague," Dr. W. L. Clark; "Auto-therapy," Chas. H. Duncan, M. D.; "Verminous Arteritis in the Horse," Dr. S. H. Burnett.

During the evening Dr. W. L. Williams gave an illustrated lecture on "Sterility in Cows."

The third day was devoted to a clinic* at the hospital of Holingworth and Young. This proved to be one of the most interesting and instructive days of the meeting. An abundance of material was at hand and an opportunity for all to see many interesting operations.

The society voted to hold the next meeting at New York during the same week as the A. V. M. A. The following officers were elected for the next year:

President—David W. Cochran.

Vice-President—W. B. Switzer.

Secretary-Treasurer—H. J. Milks.

H. J. MILKS, Secretary.

* Reported on page 708 of this issue of the REVIEW.

NORTH CAROLINA VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association and the State Board of Examiners was held in the city of Raleigh on June 25 and 26. Drs. Parker, Graves, Wood and Brown passed the examination successfully and were admitted to membership in the association.

A very interesting programme had been arranged by the secretary, and the local veterinarians and all present felt that a very profitable meeting had been held. Aside from the business and scientific discussions of the session, which in themselves deserve special mention, the visit to the Agricultural College and the plant of the State Department for the Production of Hog Cholera Serum were interesting features of the meeting. The banquet at the Yarborough Hotel was enjoyed by twenty-five veterinarians with Dr. Herring, the president, at the head of the table. Dr. Rankin of the State Board of Health delivered a strong address on the "Basis of Health Work."

Officers for the following year were elected as follows:

President—Dr. L. F. Koonce, Raleigh, N. C.

First Vice-President—Dr. J. P. Spoon, Burlington, N. C.

Second Vice-President—Dr. W. A. Hornaday, Burlington, N. C.

Secretary—Dr. M. J. Ragland, Salisbury, N. C.

Treasurer—Dr. T. N. Spencer, Concord, N. C.

M. J. RAGLAND, Secretary.

OLD AMES IN THE FRONT RANK.—Ames has always turned out from its veterinary, as well as other departments, men with the very best of qualifications, and the great state of Iowa has appreciated its work. Recently, as a material mark of appreciation of the work of the veterinary division, it has erected a \$200,000 set of buildings in which to carry on the work of that school. It will be under such inspiring conditions that Dean Stange will begin his work this year. Prof. F. W. Beckman has furnished the REVIEW with an illustrated account of the new buildings, which will interest and inspire every veterinarian in America. It reached us too late for this number, but will appear in our next.

NEWS AND ITEMS.

NOTES ON A. V. M. A.

IN THE NEIGHBORHOOD of 270 new members were elected at the Indianapolis meeting.

TREASURER WHITE'S report shows a balance in bank of \$3,207.09 at the opening of the 1912 meeting.

ASSOCIATION OF FACULTIES AND EXAMINING BOARDS held two important sessions on Monday, August 25.

TELEGRAM RECEIVED FROM DR. LIAUTARD.—Drs. Winchester and Dougherty appointed to send cable of acknowledgment.

DR. J. W. CONNAWAY stated in his paper on "Hog Cholera," that the Missouri Legislature in 1911 voted \$25,000 for the manufacture and distribution of hog cholera serum.

AT THE CLINIC.—Dr. John W. Adams operated on a sucking colt—doing the tenotomy to overcome "knuckling." The condition was an exaggerated one and the immediate results were remarkable.

LARGEST CLINIC in the history of the association held on "Poges Run" (at Indian Veterinary College); fifty-six cases were operated upon during the three clinical sessions. A complete account of clinic will be published in our next issue.

PRESIDENT BRENTON in his address paid a tribute to Secretary Marshall and to Chairman Hoskins of the Legislative Committee. He recommended an increase in the Secretary's salary, in keeping with the continued increase in membership and in the Secretary's duties.

ARMY VETERINARY BILL DEFEATED.—While the Army Veterinary Bill had the full support of both houses, it, with a number of other bills acted upon the same day, were declared illegal because a quorum was not present. So that while the untiring and vigilant work of Chairman Hoskins of the Committee on Legislation is not lost, the measure is defeated for this session. We say the work is not lost, because Dr. Hoskins has conducted a campaign of education that will not be soon forgotten by the legislative bodies with whom he labored, nor by the War Department.

OFFICERS FOR 1912.—President, John R. Mohler.

Vice-Presidents, Geo. H. Roberts, John W. Adams, H. Jensen, Chas. E. Cotton, V. A. Moore.

Secretary, C. J. Marshall.

Treasurer, Geo. R. White.

Librarian, Samuel H. Burnett.

IN DR. C. D. MCGILVRAY'S PAPER ON "HOG CHOLERA IN MANITOBA," he brought out the fact that in districts where hogs were fed on clean wholesome food, grain, etc., and live in the open fields, no hog cholera existed, and that where they were fed on uncooked garbage from kitchens and hotels, hog cholera soon made its appearance. Also that where pigs so fed were brought into the clean herds, hog cholera often soon manifested itself.

FROM Secretary Marshall's report it was shown before the election of new members that there were 1,356 active and 52 honorary members in the A. V. M. A. Of these Pennsylvania has the largest number, California second and Illinois third. Ohio and Indiana have the largest number of applicants for membership this year, which is an indication of one of the benefits that the meeting of the A. V. M. A. confers upon a locality in which it convenes.

THE FOLLOWING GENTLEMEN WERE GUESTS OF DR. GEO. H. ROBERTS at the Columbia Club on the evening of August 25, when a splendid dinner was enjoyed on the roof garden of the club building: Drs. Brenton, Dalrymple, Ellis, Glover, Hoskins, Jensen, Lyman, Marshall, Mohler, Moore, Rodgers, Rutherford, Sheppard, Stewart, White and Williams. A good view of the soldiers' monument and electric fountain at its base was had from the club house, and a splendid view of the city from the roof, and all felt very much indebted to Dr. Roberts for this kind and thoughtful courtesy.

THE BANQUET was one of the most successful and enjoyable that has been held for some time. More than two hundred and fifty sat at the festive board, and, after partaking of a most excellent repast, centered their attention on Dr. John W. Adams, of Philadelphia, who filled the position of toastmaster as only Adams can. Many members were called upon, and finally Dr. Rutherford made the address of the evening. It was not a usual speech, even from Rutherford, but a most unusual one, on our relations with Canada, that will give us all food for thought.

Other thoughts that forced themselves upon the members as they sat in the beautiful, spacious dining hall, were the hospitality of the Indiana veterinarians, and their untiring efforts to make their guests feel comfortable and at home. Pleasant indeed are the associations they carry with them to their homes, of their visit to the Hoosier state.

IN DR. MOHLER'S REPORT ON DISEASES he showed that foot and mouth disease is prevalent in Europe at the present time. Among other places it is in Ireland, where it has not been for 29 years. Owing to the fact of its prevalence abroad and its ready communicability, Dr. Mohler recommends a sharp lookout against another visitation from it in this country. *Dourine* is spreading throughout the United States.

Infectious abortion has made its appearance in nearly all parts of our country and is a great menace to the cattle raising interest—in that respect it is second in importance only to tuberculosis. In regard to *glanders* the doctor stated that the combination of the complement fixation and agglutination tests is the most accurate laboratory method of diagnosing glanders at our command at the present time—98 per cent. of accuracy. The ophthalmic test for glanders is the official test of Austria. The test solution is applied to the conjunctiva of one eye with a soft camel's hair brush, the other eye being used for a check. The reaction is prompt, and this test has been found to be superior to the subcutaneous injection of mallein.

Malta fever, or slow typhoid, is found among the stock in Texas—has existed there in fact for 25 years.

Speaking of *tetanus*, Dr. Mohler spoke of the dependable immunizing agent the veterinary profession has in tetanus anti-toxin, and expressed regret that it was not more generally taken advantage of in that capacity. The doctor stated that from experiments made as to the minimum dose that will render a subject immune, it has been determined that 500 units is sufficient. In cases where 400 and 250 units had been used, the animals developed symptoms, but subsequently recovered, but that 500 units, one-third of the quantity now used, is sufficient to render an animal immune, if given within four days after infection, in the experimental cases.

DR. SALMON'S ILLUSTRATED LECTURE ON Uruguay on Monday evening, August 25th, at the Claypool Hotel was extremely interesting. After throwing upon the screen a map of the western hemisphere, showing the relative location of Uruguay to the

United States, to Africa and to Spain, the doctor proceeded to give a history of the country, its early settlement, etc., showing views of its people, buildings, cattle, sheep and other animals. Dr. Salmon stated that this little country has eight million cattle and twenty-six million sheep. The Herefords are the most popular breed of cattle; the shorthorns are also quite prevalent. Tick fever exists in one part of the country. The doctor showed a line dividing the part of the country infected, and that which is not. A picture of four yokes of oxen attached to a two-wheel cart, carrying heavy bales of wool, was shown. He showed orange and lemon trees, which ripen their fruit on the trees in midwinter. Palm trees, which grow everywhere in the open ground, give the country that tropical beauty that cannot be reproduced outside of a tropical country. One of the principal productions of the country is wool, which might be inferred from the great number of sheep referred to. Ninety million pounds is annually exported. The country was colonized by Spaniards in 1624. A picture of an immense cactus was thrown on the screen, which, judging from the relative height of the man that stood at its base, might reach a height of twenty to twenty-five feet and be fifty feet in circumference. Beautiful lakes, gardens, bathing beaches, etc., were shown in and around Montevideo; also the principal streets and buildings of that city, including the new veterinary buildings in course of construction, for which the government appropriated \$500,000, and \$73,000 for the maintenance of the school. Finally a throng of pleasure-seekers at one of the beaches or other resorts was shown, which gave evidence, that for style and quality of dress, they are not behind people of the United States. The women of the country are very beautiful. Those who were so fortunate as to be present at Dr. Salmon's lecture feel under great obligations to him, and will always retain a pleasant recollection of the event.

THE OLD ORIGINAL CONKEY CASTING HARNESS, used by L. L. Conkey for twenty-seven years in casting horses for a variety of operations, was used by Dr. George R. White to throw a horse upon which he afterward operated at the Indianapolis meeting.

THE DUTCH LUNCH on Wednesday evening, August 28, was a welcome and fitting finish to the evening after the election of officers to the A. V. M. A. for the coming year. Always more or less strenuous, this year it was especially so, due to the large number of votes cast, and the great number of nominees, es-

pecially for the vice-presidency. The lunch was set down for 9 p. m., but it was after 11 before the work of electing officers had been completed. But it was all the more enjoyable when it was reached, and the vaudeville, held in the beautiful open garden beside the German House, following the luncheon, did much to relax and rest the members, and was a happy termination to a strenuous day.

RESOLUTIONS ADOPTED AT INDIANAPOLIS.

Recent changes in State Boards, in some of our states, strongly indicate the dangers that confront our profession in either advancing or maintaining fairly high standards already established. We, therefore, recommend: That the Committee on Legislation will continue their consideration and efforts to establish a federal licensing system in the United States.

Whereas, Hog cholera has become very prevalent throughout the United States and Canada, and

Whereas, Much difference of opinion prevails among those who are endeavoring to prevent its spread and to eradicate the disease; be it

Resolved, That the Committee on Diseases collect and prepare scientific and practical data on the control of hog cholera to be submitted at our next meeting.

Whereas, The veterinary instruction given in agricultural colleges to students pursuing the four-year agriculture courses varies materially in the several agricultural colleges, and

Whereas, Graduates of agricultural colleges may receive one-year time credit in veterinary colleges, accredited by this association, providing said graduates in agriculture have had sufficient veterinary science; be it

Resolved, That the president appoint a committee of three to outline such sufficient veterinary science, and to recommend to agricultural colleges the extent and scope of veterinary science which this association believes should be included in such agricultural courses.

LOCAL COMMITTEE.

Resolved, That we highly commend the local committee for the very excellent arrangements provided for this meeting, and especially for the extent and quality of clinics. And that we hereby tender them the thanks of the Association for their generous entertainment.

TO RETIRING OFFICERS.

Resolved, That we sincerely thank the retiring officers and committees for their excellent and painstaking efforts in the administration of their various duties:

NOTES ON THE NEW YORK STATE MEETING AT UTICA.

EIGHTY members registered at the Utica meeting of the New York State Veterinary Society.

THE New York State Veterinary Medical Society seems to have unconsciously fallen into the practice of the Grand Army of the Republic of that state, *i. e.*, alternating its election of a president, up-state-man one year and one from the metropolitan district the next. Dr. David W. Cochran, a veteran practitioner of New York City, was honored with the office at the recent meeting in Utica.

ASIDE from those from the practice, Drs. Hollingworth and Young, Utica, subjects were sent in to the clinic from Clinton, Rome, Deansboro, Waterville and Little Falls.

SOME OF THE VISITORS TO THE NEW YORK STATE VETERINARY MEDICAL SOCIETY: Charles H. Duncan, M. D., New York City; Drs. Johns, Spence and Ford, pathologists; Dr. Bernstein, director and custodian of the state asylum, and Dr. Rogers (chemist), director of Pratt Institute, Brooklyn, N. Y.; Veterinarians Charles Perry, Worcester, Mass.; F. J. De Land, Fair Haven, Vt.; Benjamin D. Peirce, Springfield, Mass., and H. F. Palmer, Philadelphia, Pa.

PRESIDENT JOHN F. DE VINE, in his address before the society, spoke of the present bright outlook for the properly educated and trained veterinarian and, while he stands for higher education, as he has always done, and would not favor a reduction in the requirements for entrance into veterinary schools in New York state, neither would he under any condition sanction an advancement of the same. In this respect he said: "While it is absolutely essential to have a reasonably safe framework on which to build, it is possible to overdo the education question for practical purposes; a feeling too easily acquired by those living in a university atmosphere." He also dwelt at some length upon education and its practical application, in which he expressed some hard facts about "kid glove" veterinarians and their lack of ability as practitioners.

G. ED. LEECH "IN DUTCH."—Two features of the Minnesota mid-summer meeting seem to have made a deep impression on Secretary Leech *i.e.*, the young ladies who served the Parke, Davis luncheon and the absence of the "Dutch" from same. After all, specimens of the *genus homo* are much alike.

MISSOURI STATE VETERINARY ASSOCIATION held one of the most successful meetings, at Marshall, it has enjoyed for some time. Fifty members were present, and forty new names were enrolled on the membership list. Some excellent papers were presented and discussed; immunity against hog cholera was given considerable attention. It was voted at the business meeting to publish the proceedings, and Dr. S. Stewart was selected to edit same.

THE PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION will hold its next meeting at Harvey's Lake, Wilkes Barre, at Hotel Oneonta, September 17, 1912. It promises to be largely a sociable function, and time of recreation, before settling down to the many arduous duties that come with the autumn and winter.

VETERINARIANS AND WIVES HAVE BASKET PICNIC.—The veterinarians and their wives to the number of about fifteen met at Lakewood on shores of Wall Lake, Iowa, July 28. All had a splendid time boat-riding, bathing and eating such basket lunches as only a veterinarian's wife knows how to prepare. The occasion was so pleasant that it was agreed to meet again September 8, when, if the weather is good, a large attendance is looked for.

VETERINARIAN IN NEW LINE OF SANITARY WORK.—Dr. Cassius Way, Harvard, Ill., has severed his connection with the Borden's Condensed Milk Co., to take up a line of sanitary work with Hunt, Helm, Ferris & Co., in connection with their Barn Equipment and Sales Department. This concern, facing a constant demand for scientific and practical advice to farmers, decided that a veterinarian was the man best qualified to meet those requirements. We are sure that they have been fortunate in securing Dr. Way for this position, and that their patrons, the dairymen, will also profit by it, in getting good, sound, scientific and practical advice along the various lines of dairy husbandry.

INSPECTOR'S ASSISTANT (MALE), B. A. I.—DEPT. AGR.

The United States Civil Service Commission announces an examination on October 9, 1912, to secure eligibles from which to make certification to fill vacancies as they may occur in the position of inspector's assistant (male), at \$840 per annum, in the Bureau of Animal Industry, Department of Agriculture, unless it is found to be in the interest of the service to fill such vacancies by reinstatement, transfer, or promotion.

As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will therefore arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C.

HORSE SHOWS.

Canadian National Exhibition, Toronto, Can., Aug. 24- Sept. 9.	Mineola, Sept. 26-28.
Newport, R. I., Sept. 2-4.	Spokane, Wash., Sept. 30- Oct. 6.
Orangeburg, N. Y., Sept. 4 and 5.	Brockton, Oct. 1-4.
Hartford, Conn., Sept. 4-6.	Piping Lock, Locust Valley, L. I., Oct. 4, 5.
Lake Forest, Ill., Sept. 7.	Montclair, N. J., Oct. 5.
Syracuse, N. Y., Sept. 9-14.	Dallas, Tex., Oct. 12-27 (Race Meet).
Wilmington, Del., Sept. 10-12.	Hagerstown, Oct. 12-18.
Ogdensburg, N. Y., Sept. 16- 20.	Morristown, Sept. 26-28.
Detroit, Sept. 16-20.	Locust Valley, Oct. 4, 5.
Rochester, N. Y., Sept. 17-19.	Danbury, Conn., Oct. 9.
White Plains, Sept. 18-23.	St. Louis, Mo., Oct. 21-26.
St. Joseph, Mo., Sept. 23-28.	National, New York, Nov. 16- 23.
Bryn Mawr, Sept. 25-28.	Chicago, Dec. 2-7.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alabama Veterinary Med. Ass'n..	August, 1913....	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Week Aug. 26, '12	Indianapolis..	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médécalle Veterinaire Fran- çaise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha ..	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	Sept. 11, 1912....	Fresno	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	Jan., 1913	Denver	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	.....	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	.....	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	July 9, 1912. ...	Springfield ...	L. A. Merillat, Chicago.
Indiana Veterinary Association...	Jan. 15-16, 1913..	Indianapolis..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	.....	.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n....	January, 1913...	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Lake Erie V. M. Association.....	Oct. 8-12, 1912...	Lorain, O.....	Phil. H. Fulstow, Norwalk, O.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	October, 1912....	Skowhegan....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young's Bost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n....	July 10-11, 1912.	Minneapolis...	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n	July 29-30, 1912..	Marshall	S. Stewart, Kansas City.
Montana State V. M. A.....	Jan. 29-30, 1912.	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912....	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	Jy. 30-31, Aug. 1.	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June, 1913.....	Salisbury.. ...	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	Fargo.....	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.....	Feb. and Nov...	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Milty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	Sept. 17, 1912....	Wilkesbarre...	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo
Schuylkill Valley V. M. A.....	Dec. 18, 1912....	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn....	.....	Philadelphia..	B. T. Woodward, Wash'n; D. C
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n .....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514-9th St., N. W.....	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	M. Page Smith, Wash., D. C.
Vet. Med. Ass'n of N. J.....	Jan., 1913	Jersey City....	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	E. L. Loblein, New Brunswick.
Veterinary Practitioners' Club...	Monthly.....	Jersey City ...	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n	July 11, 1912....	Newport News	A. F. Mount, Jersey City.
Washington State Col. V. M. A..	1st & 3d Fri. Eve.	Pullman.....	Geo. C. Faville, Norfolk.
Washington State V. M. A.....	Jan. 9-10, 1913..	Wenatchee....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Carl Cozier, Bellingham
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville.....	Benjamin Gunner, Sewickley
York Co. (Pa.) V. M. A.....	June 4, 1912....	York.....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

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AMERICAN VETERINARY REVIEW

EDITED BY

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And several others.

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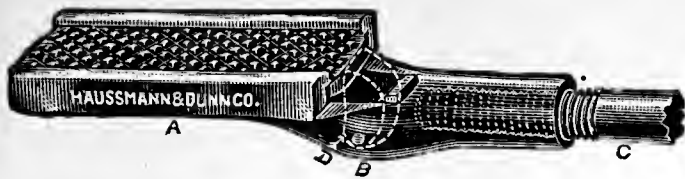
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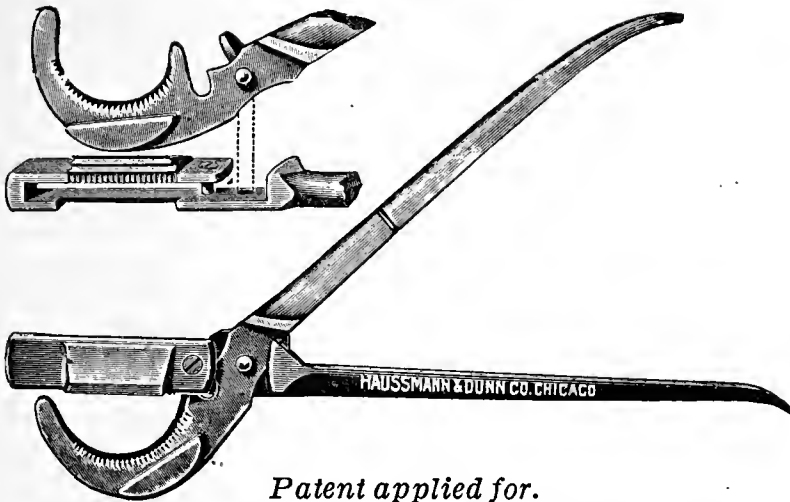
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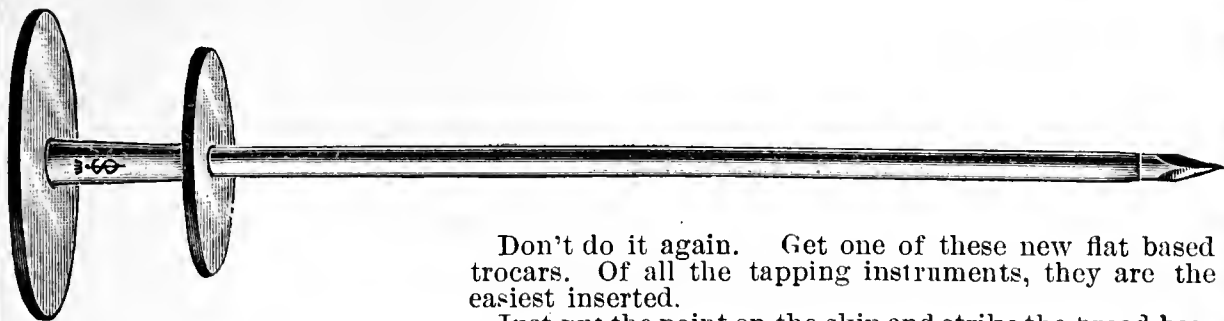
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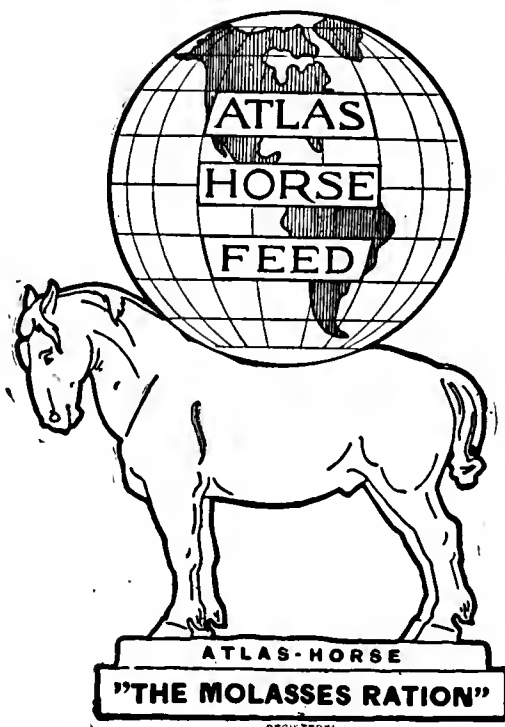
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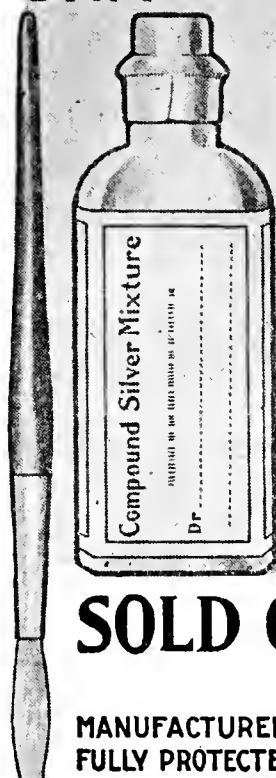
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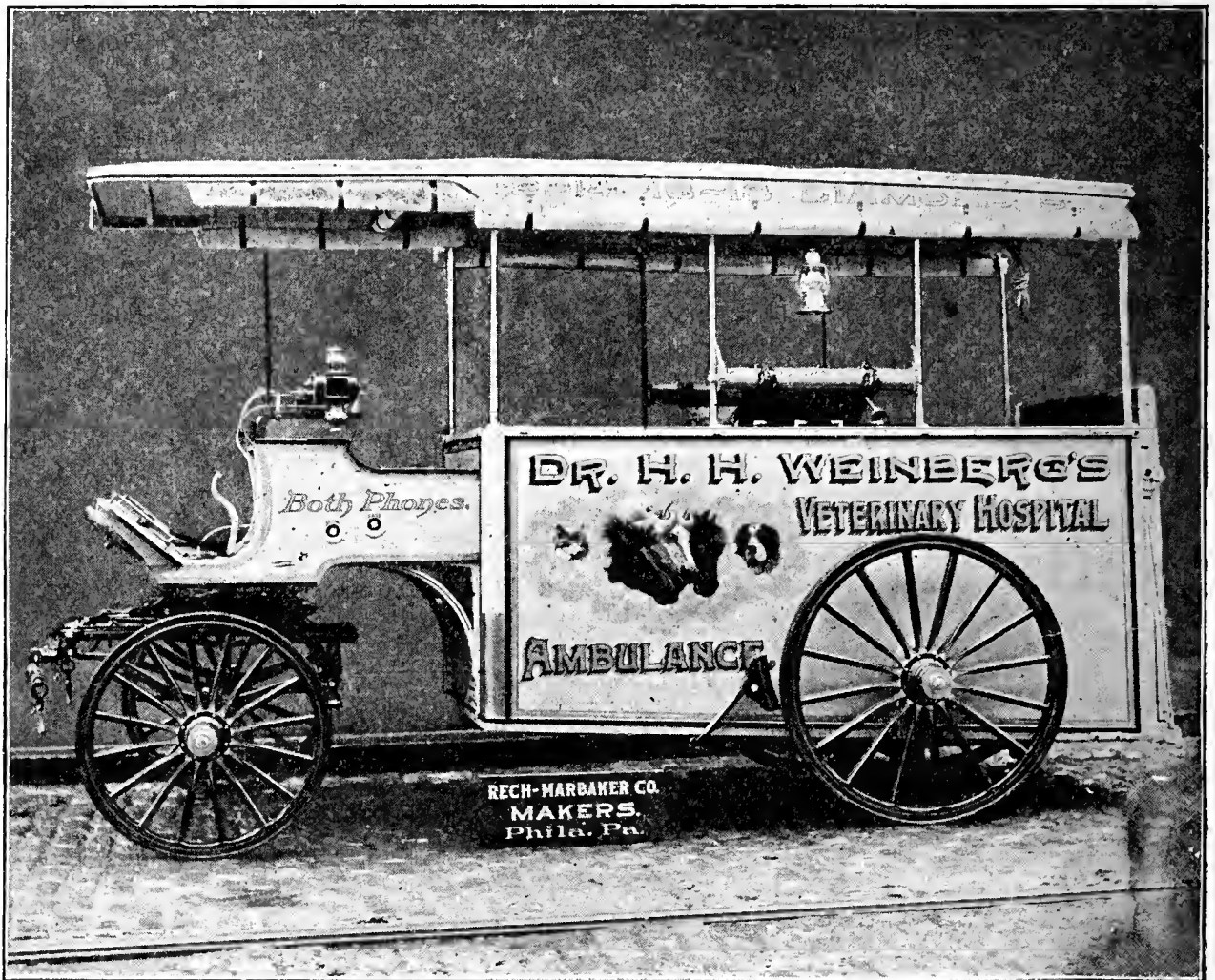
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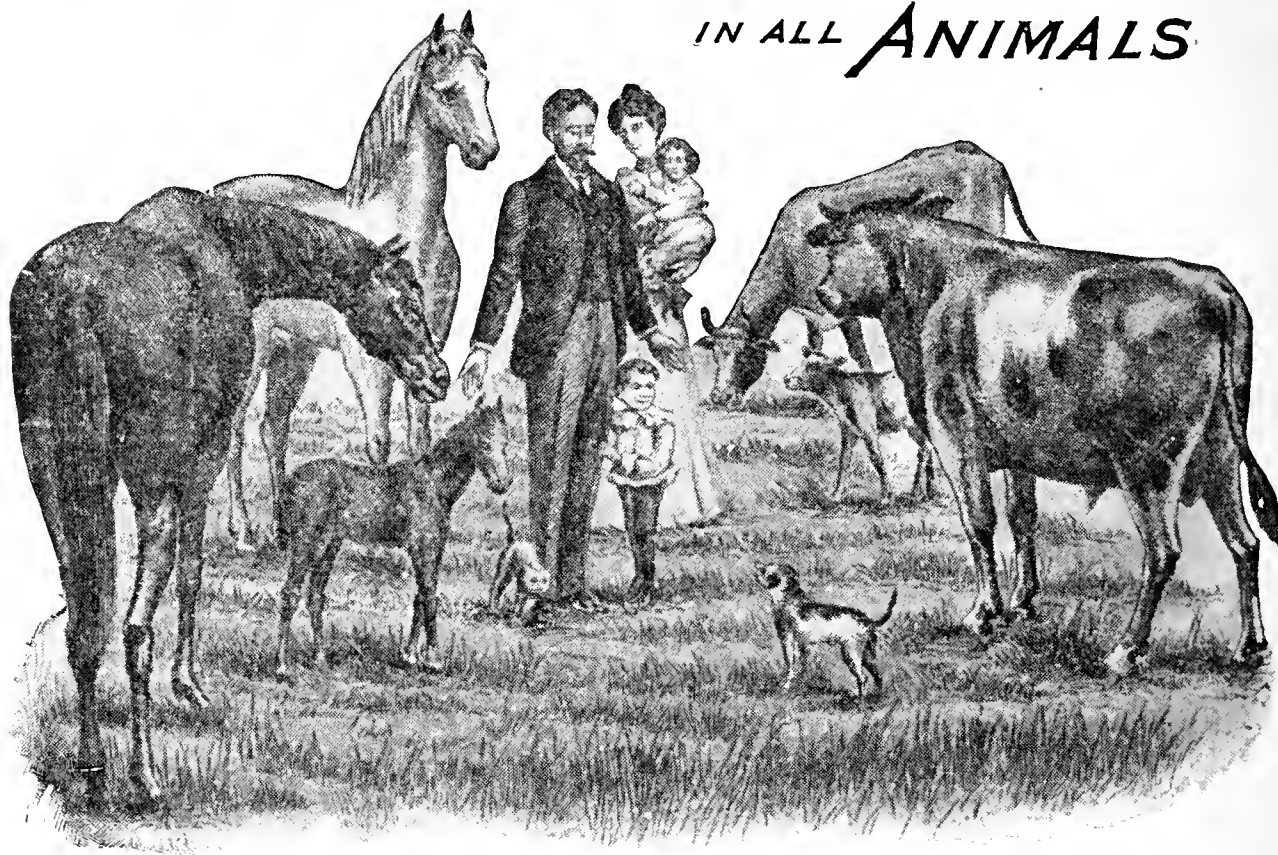
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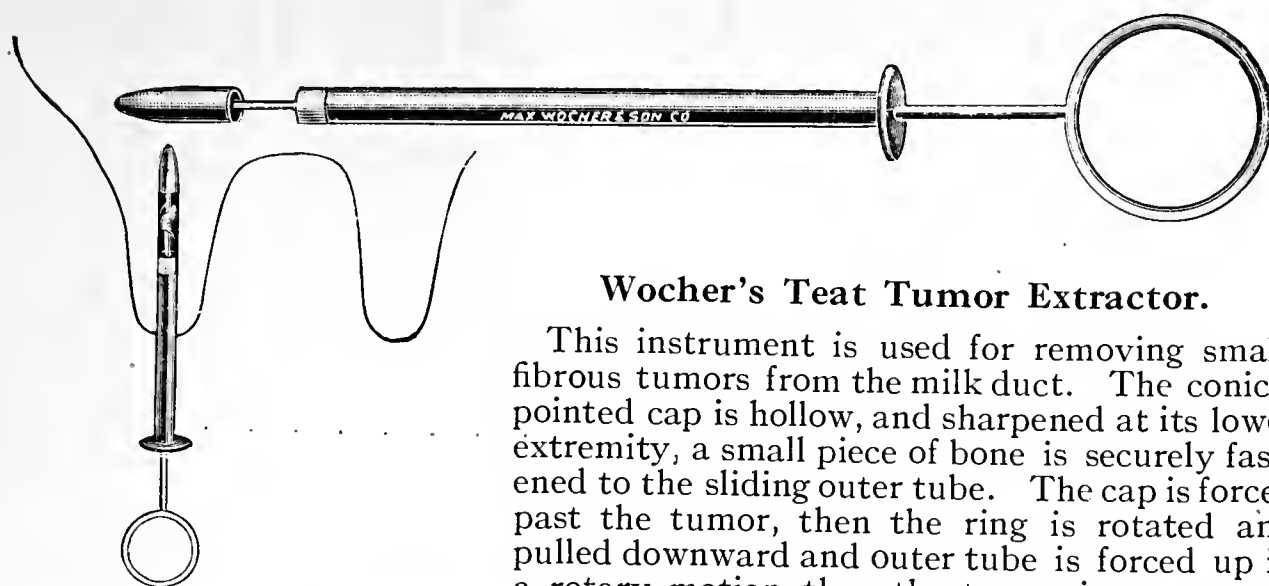
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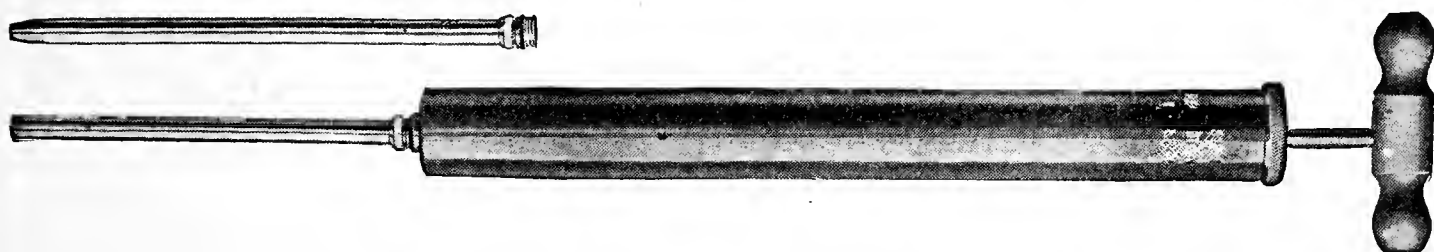
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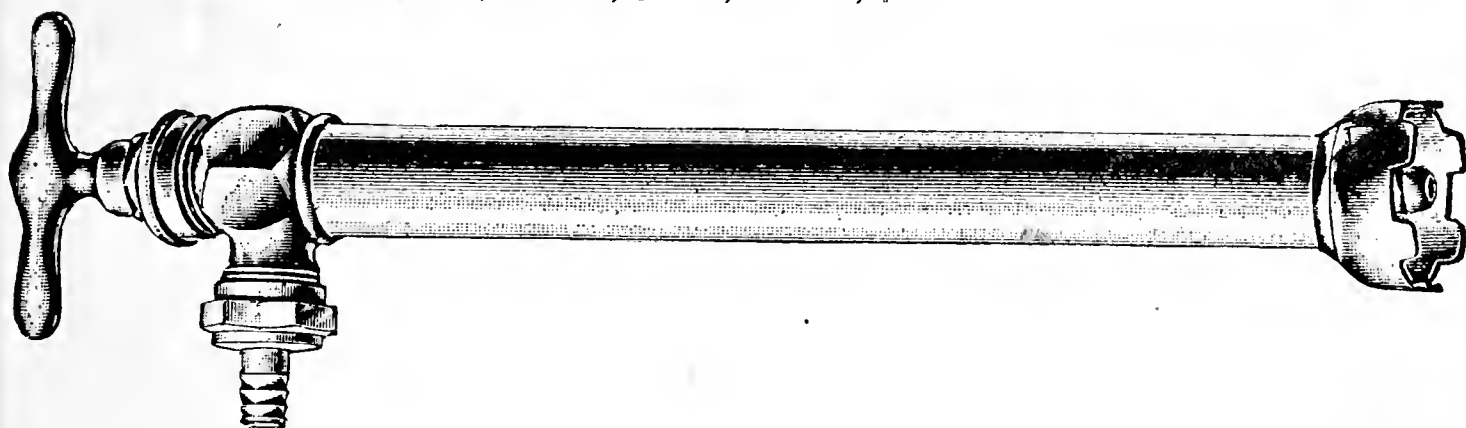
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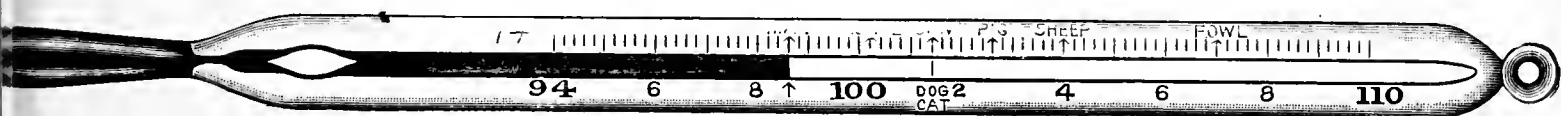
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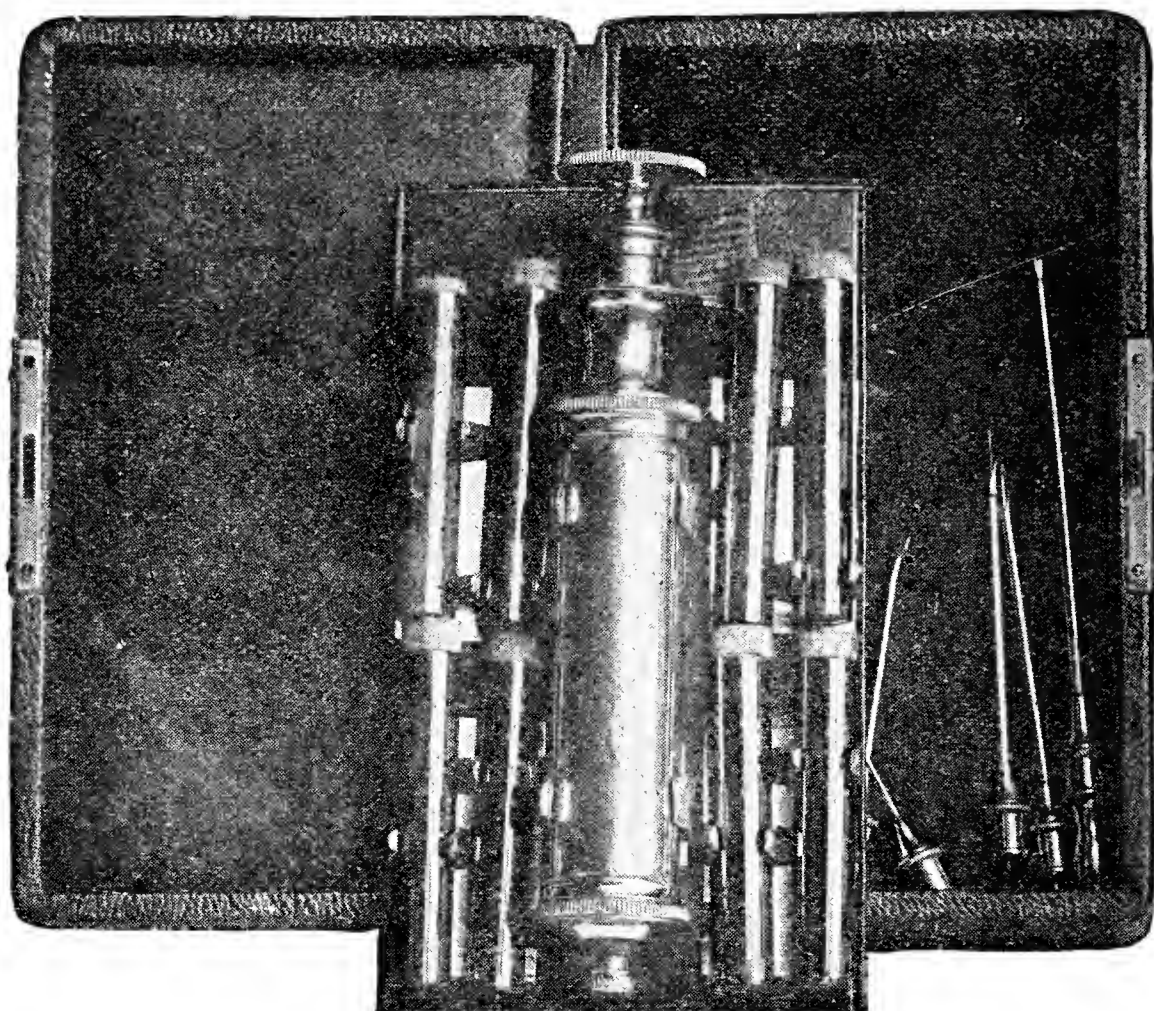
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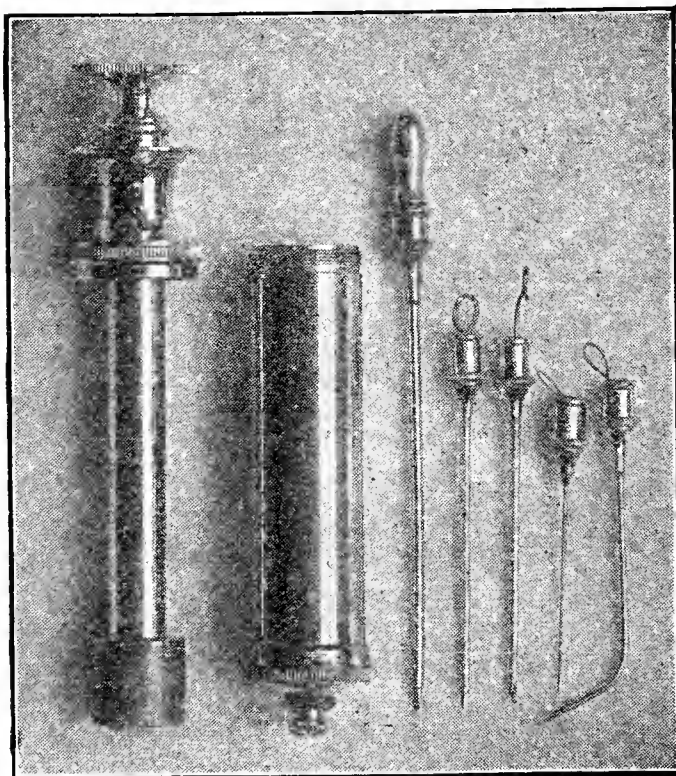


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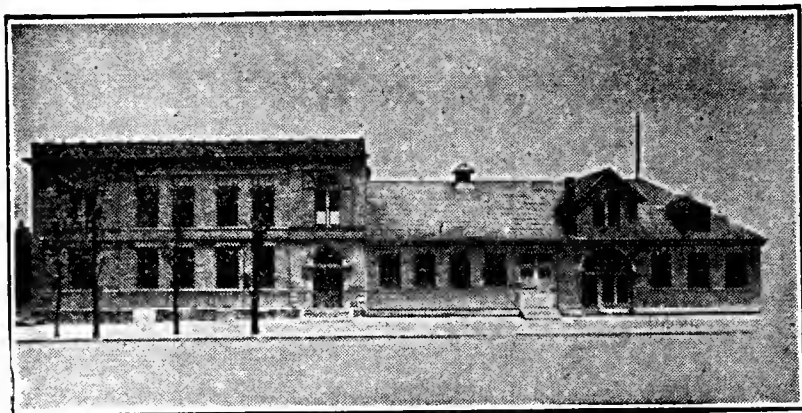
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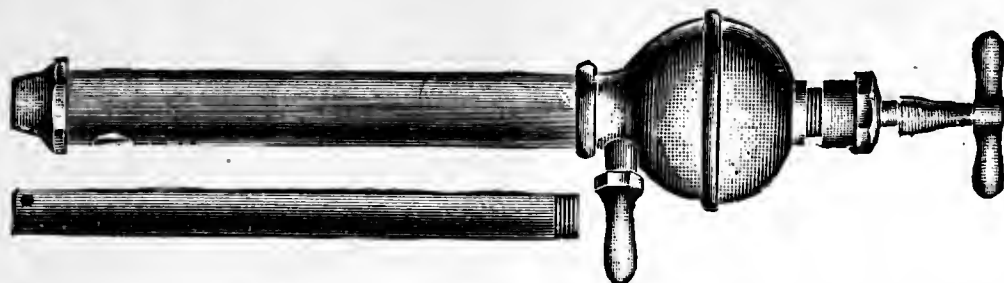
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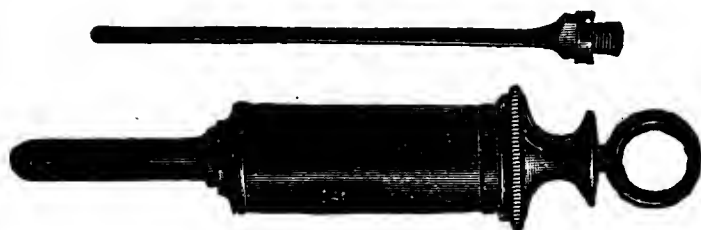


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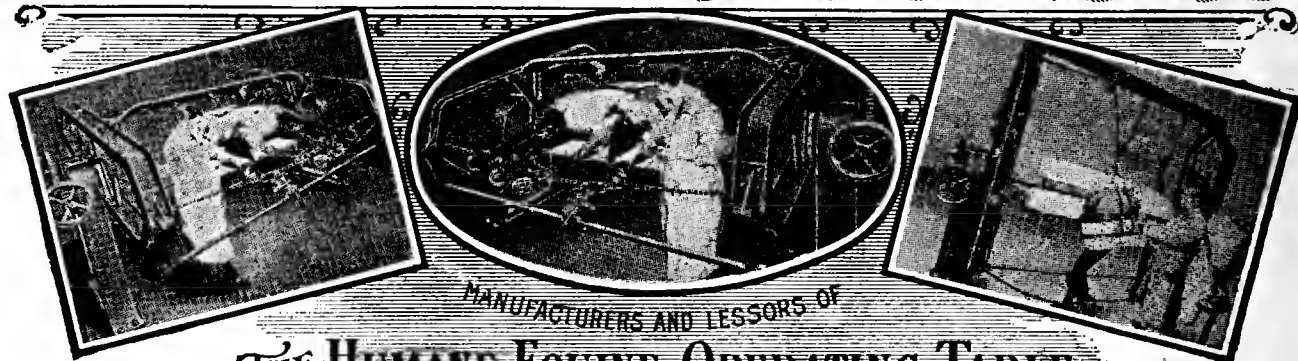
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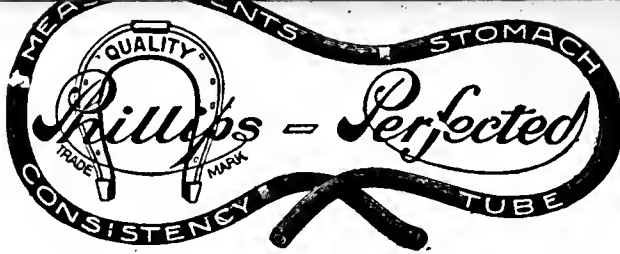
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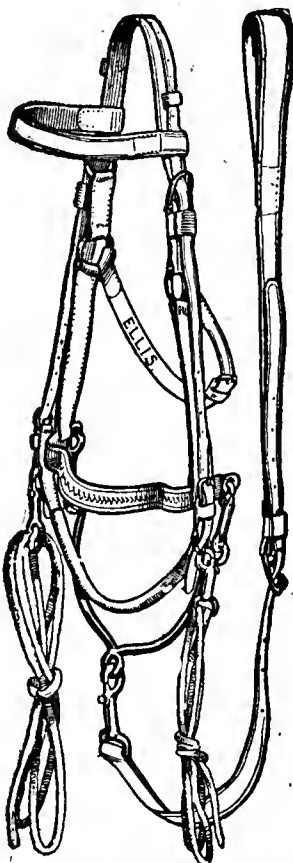
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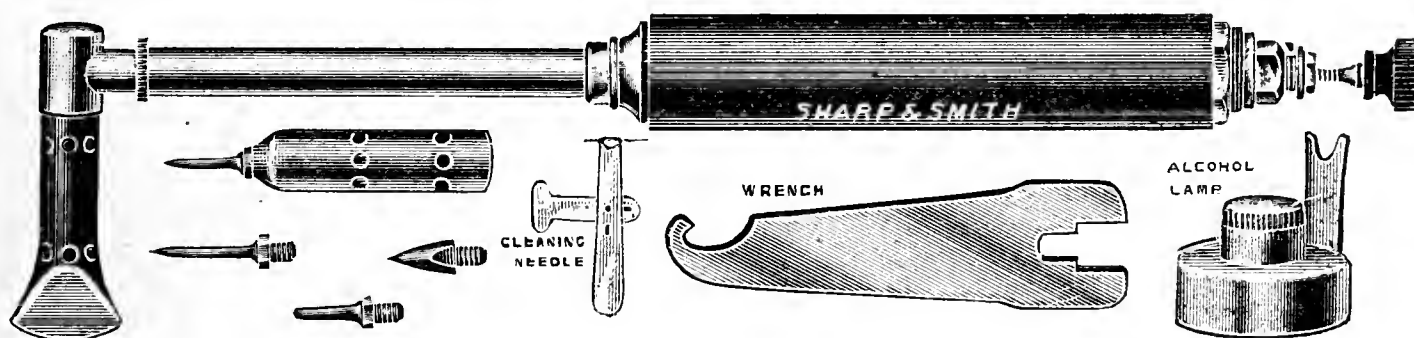


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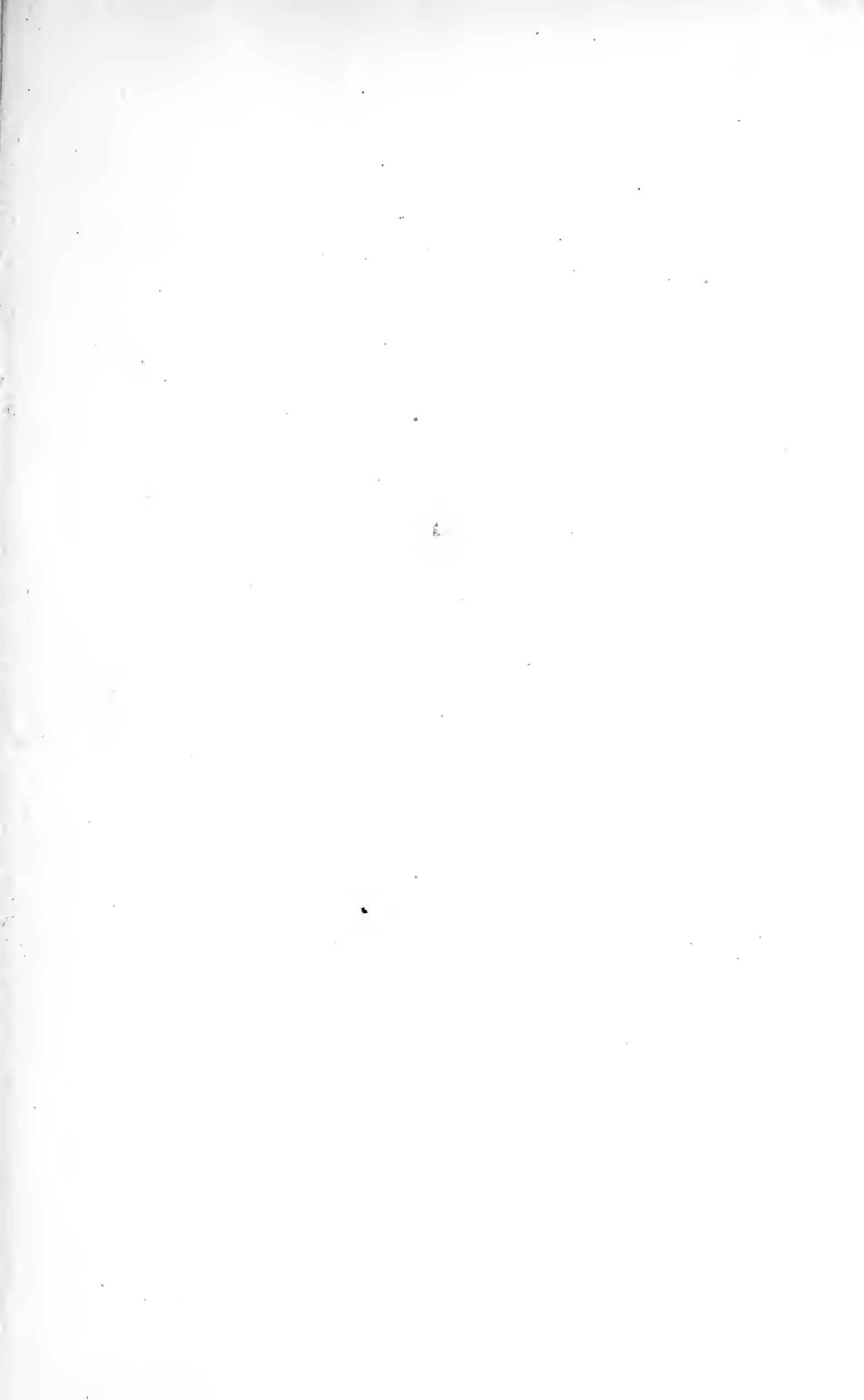
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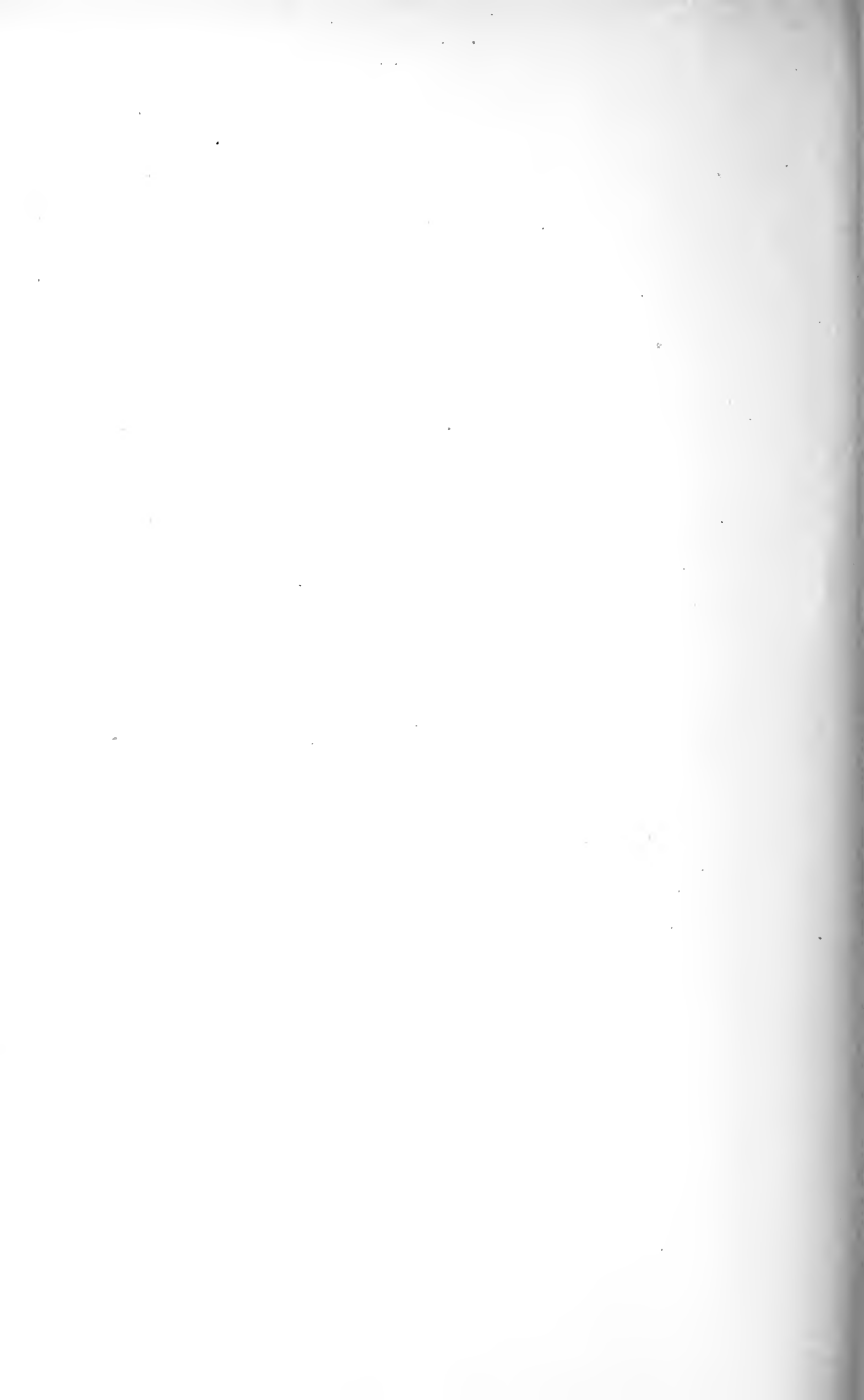
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